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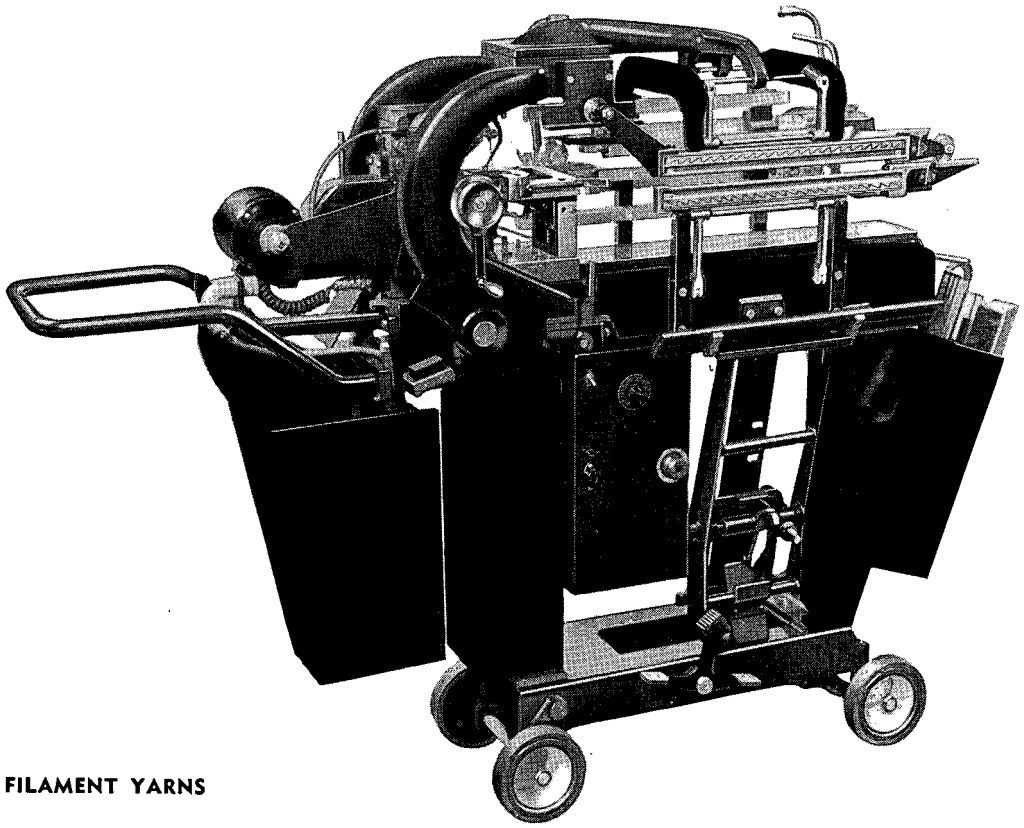
MODEL L PORTABLE WARP-TYING MACHINE

*For Tying-In Warps Directly Behind The Loom**



*
COTTON
WOOL
WORSTEDS
LINEN
MOHAIR
SILK
SPUN AND FILAMENT YARNS

Automatic Spoolers • *Super-Speed Warpers* • *Warp Drawing Machines* • *Twister Creels*

BARBER - COLMAN COMPANY

ROCKFORD, ILLINOIS, U. S. A.

Framingham, Mass., U. S. A.
Greenville, S. C., U. S. A.

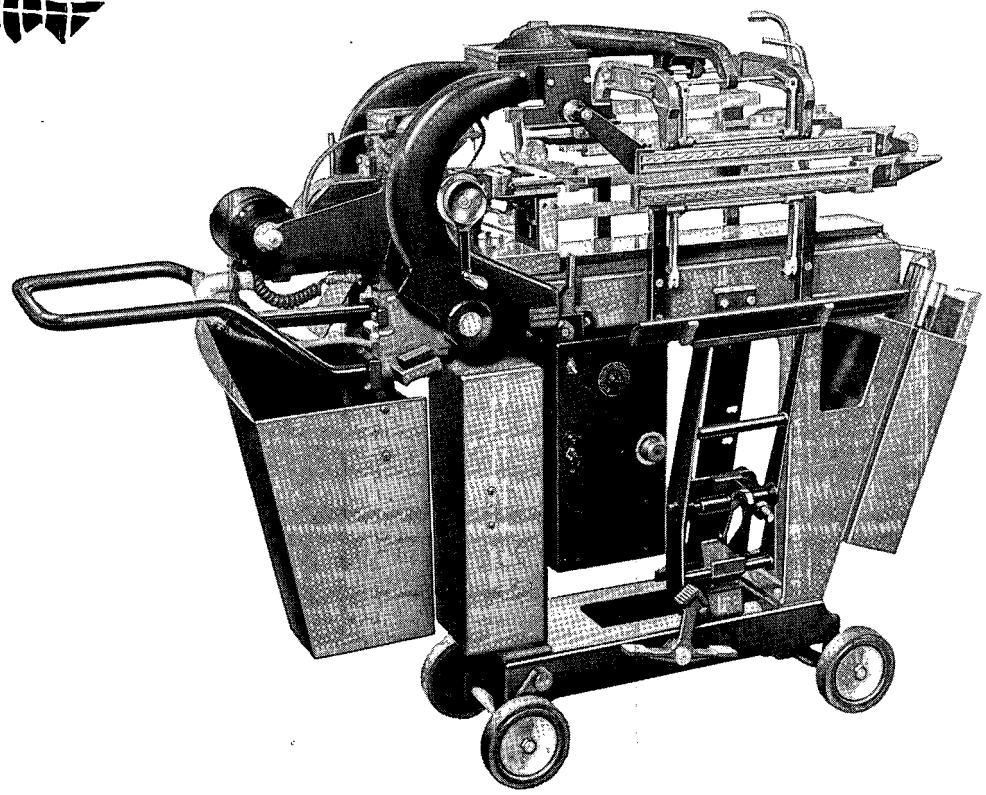
Manchester, England
Munich, Germany

-7-

MODEL L

PORTABLE WARP-TYING MACHINE

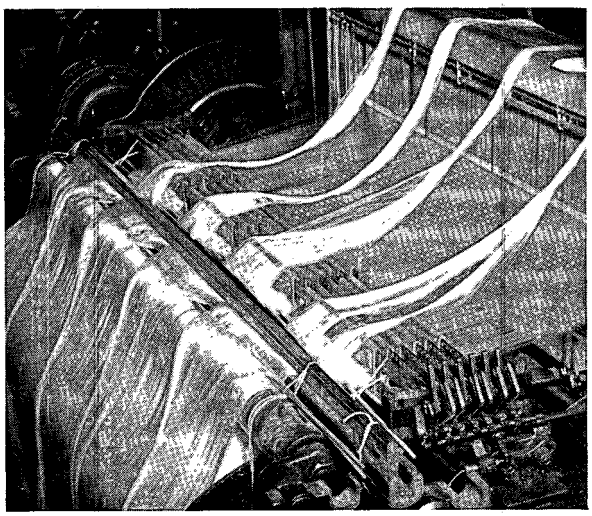
Increase Loom Production!



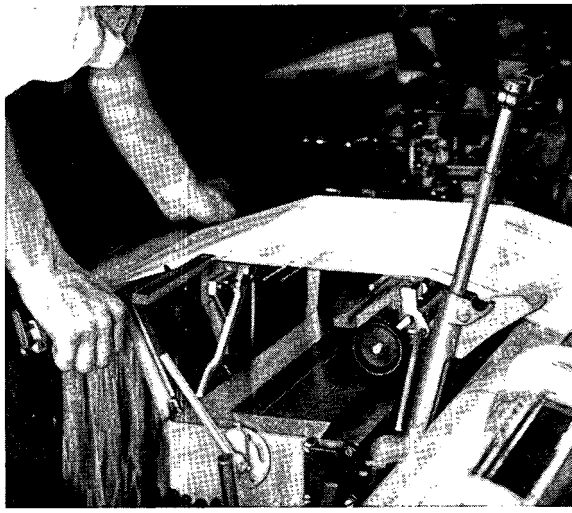
Reduce

- TYING-IN, DRAWING-IN, TWISTING-IN COSTS
- TIME AND MATERIAL WASTE
- SECONDS—RESETTING WEAVING ELEMENTS

STEPS IN PREPARATION OF WARP FOR TYING-IN



A new warp is shown prepared for tying-in. Both new and old warps have been properly divided into sections required for loading into Portable Warp Tying Machine.



The lower or new warp section has been brushed out and is ready to be clamped into lower warp frame.

- **QUICK, EASY TYING-IN**
- **TIE-IN DIRECTLY BEHIND LOOM OR AT FRAME**
- **SAVE RESETTING WEAVING ELEMENTS**

The constantly increasing number of weaving elements in the loom has made the Portable Warp-Tying Machine a tremendous saver of time and money. When the warp is woven out it is not necessary to remove the weaving elements from the loom. The machine is moved into position and tying-in is done directly behind the loom. Due to its compact form and light weight, the machine is easily transported from loom to loom throughout the weave shed.

Barber-Colman Portable Warp-Tying Machines have operated profitably for mills with as few as 30 looms. Full time operation is not required to show satisfactory savings. Here are some typical examples: ▶

SERVICE

All mechanical equipment needs occasional servicing to maintain top operating efficiency. Expert service facilities are provided on Barber-Colman equipment through branch offices conveniently located near textile centers. Trained technicians are available on short notice for installation, consultation, check-up or adjustment of equipment operating in the mills. Replacement parts are also carried in stock for prompt delivery.

This service policy assures mills of top efficiency and maximum production hours in the operation of Barber-Colman equipment.

TYPICAL PRODUCTION HISTORIES

NYLON

10,800 Ends
40/34/15 TT
220 Threads Per 1"
Complete Tying-In Cycle:
Preparatory, Tying-In, Pulling over Knots and Start Loom } **85 Minutes**

COTTON

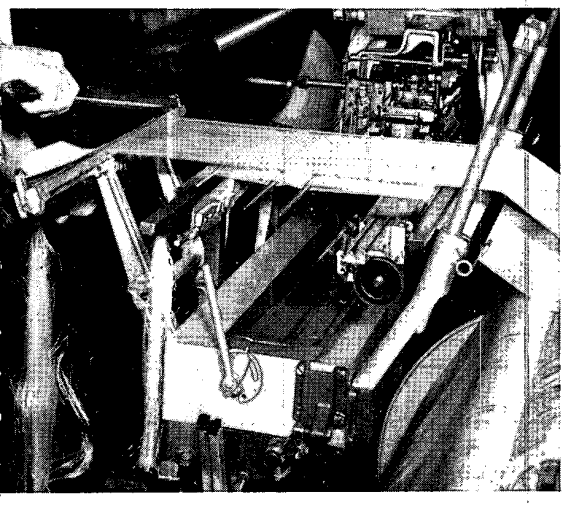
3,268 Ends
18's/2
80 Threads Per 1"
Complete Tying-In Cycle:
Preparatory, Tying-In, Pulling over Knots and Start Loom } **45 Minutes**

WOOL

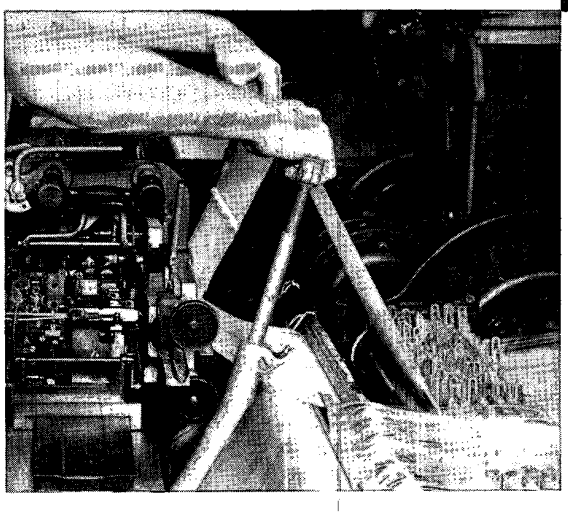
4,000 Ends
4½ Run
45 Threads Per 1"
Complete Tying-In Cycle:
Preparatory, Tying-In, Pulling over Knots and Start Loom } **65 Minutes**

•

These conditions will vary depending on type of yarn and model of machine used.



The upper or old warp section has been brushed out and is ready to be clamped into upper warp frame.



New and old warp section completely tied and section elevated for inspection of knots.

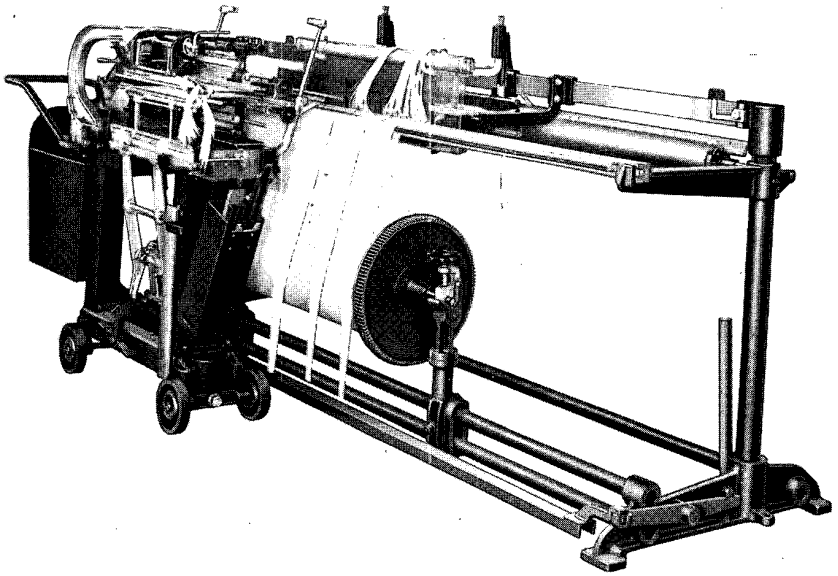
BARBER COLMAN ®

BARBER COLMAN

TIE-IN WARP THREADS

from

- A FLAT SHEET
- AN END-AND-END LEASE



The flexibility of Portable Warp Tying Machines also includes tying-in warps away from the loom, using an extra beam frame as shown.

TYPE 15 LC

Selects Warp Threads From a Flat Sheet

The purpose of this machine is to tie-in a new warp to the ends of the old warp at the loom without disturbing the settings of the weaving elements. The machine is mounted on rubber tired, ball bearing wheels and can easily be moved from loom to loom. It occupies a position in a loom alley similar to that of a Hand Twister, but with a competent operator it has a production equal to several Hand Twisters.

The machine successfully ties cotton and spun yarns. It will handle a variety of fine to coarse counts with a few changes and adjustments in the mechanism.

TYPE 15 LL

Selects Warp Threads From Either Flat Sheets or End-and-End Lease, As Desired

This machine is equipped with selector mechanism of both types; one for selecting from an end-and-end lease, as on the Type 15 LS, and the other for selecting from a flat sheet, as on the Type 15 LC. The selecting mechanisms are designed and incorporated in the carriage so that they may be readily inter-changed. Change-over can easily be made in five to ten minutes, depending upon the speed and skill of the operator. The comparatively few parts for making the change-over are shown on the back page. Production rates correspond with operations on the Type 15 LC and the Type 15 LS.

This machine fills a need for those mills tying-in both flat sheet and end-and-end lease warps, and where both the 15 LC and 15 LS machines cannot be utilized to full capacity.

TYPE 15 LS

Selects Warp Threads From an End-and-End Lease

This machine is designed for tying-in rayon and other yarns constructed from synthetic fibers in which leases are provided. It operates in a manner similar to the Type 15 LC, but is equipped with an entirely new type of selecting mechanism. This mechanism selects warp threads from the leases to insure as near perfect straightness as is possible to attain. The greater the number of ends per warp, the higher will be the average hourly production. This type is particularly well adapted for tying-in wool, worsteds, etc., where it is essential to maintain a straight warp.

OPERATION

When the warp has been woven out, a new beam is placed in the loom and prepared for tying-in. The portable warp tying Machine is wheeled into position, parallel with the beam. The new warp threads are straightened by brushing, or with lease rods, and then clamped into the lower warp frame. It is not necessary to draw the old warp threads out of the harnesses, nor to disturb the other weaving elements. The old warp ends are prepared directly from the loom in the same manner as the new warp, and are clamped into the upper warp frame. In this manner the two sheets of warp threads are held parallel about three inches above the bed of the machine.

The mechanism for tying-in is contained in the carriage which runs on guides along the bed of the machine. The carriage is moved along the bed until it contacts the two warp sheets. The feed mechanism is engaged and the machine operated by hand crank or motor. As the threads are tied, the carriage feeds forward. If one or both selectors fail to catch a thread, the knotter will not function until a thread from each sheet is properly picked. All functions are entirely automatic.

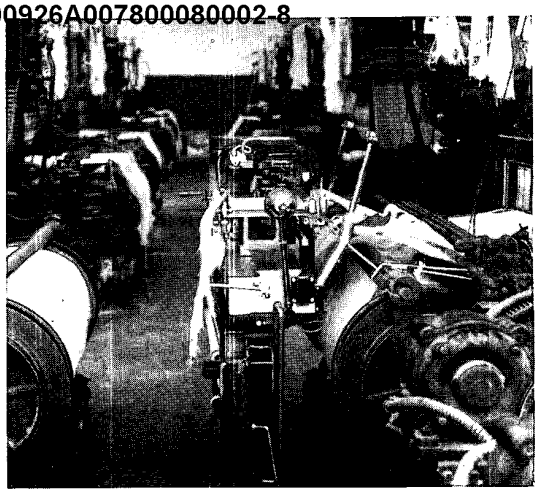
Precise selectors on the Type 15 LC pick only a single thread each from the upper and lower warp sheets. These are fed to the knotter where they are tied together, and the ends trimmed off neatly. Warps may be tied-in on Type 15 LC from a slasher comb, gummed tape or lease rods. On Type 15 LS, special selectors are used for selecting from an end-and-end Lease. The Type 15 LL combines the selector features of both Types 15 LC and 15 LS.

The feeding mechanism is designed to automatically take care of inequalities in the spacing of the threads. Consequently, it does not have to be set when changing from different counts of yarn or sley.

Several interchangeable knotters are available for handling different sizes of yarn.

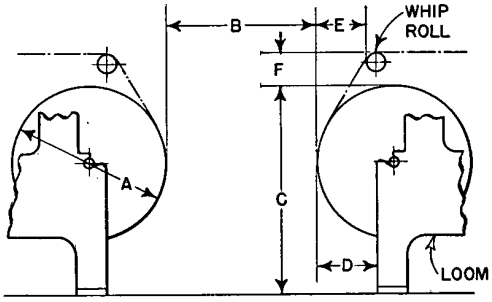
Tying proceeds at the rate of 250 to 300 knots per minute. In some cases these figures have been considerably exceeded.

These machines are suitable for tying stripes, plaids or multi-colored warps. A wide range of patterns and yarns can be handled including: Ducks, Toweling, Damasks, Crochet and Satin Quilts, Dobbies, Wide Sheeting, Blankets, Corduroys and Multiple Beam Work. Production should average 4000 to 9500 ends per hour, depending on conditions and which model machine is used.



A Barber-Colman Portable Warp Tying Machine in a typical weave room, showing how it is used in the loom alley. The machine shown has completed the tying-in on part of a beam.

Characteristic loom alley dimensions, shown in the diagram, indicate the practicability of using a portable machine. Dimension "B" is the most important. A list of all dimensions needed is shown in order to determine whether these machines can be used in a particular mill.



ALLEY DIMENSIONS

A—Diameter of Beam Head
B—Width of Loom Alley, Minimum (and Space between Upper Beams, if any), Model L 12".
C—Distance Top of Beam to Floor
D—Clearance below Beam
E—Whip Roll to Outside of Beam
F—Whip Roll to Top of Beam

An operator about to complete the loading of a Barber-Colman Portable Warp Tying Machine. This illustration shows the relative position of the two warp sheets in the machine.

MODEL L

WARP TYING MACHINES

- PROVIDE MOBILITY
- LIMITED SPACE CONVENIENCE

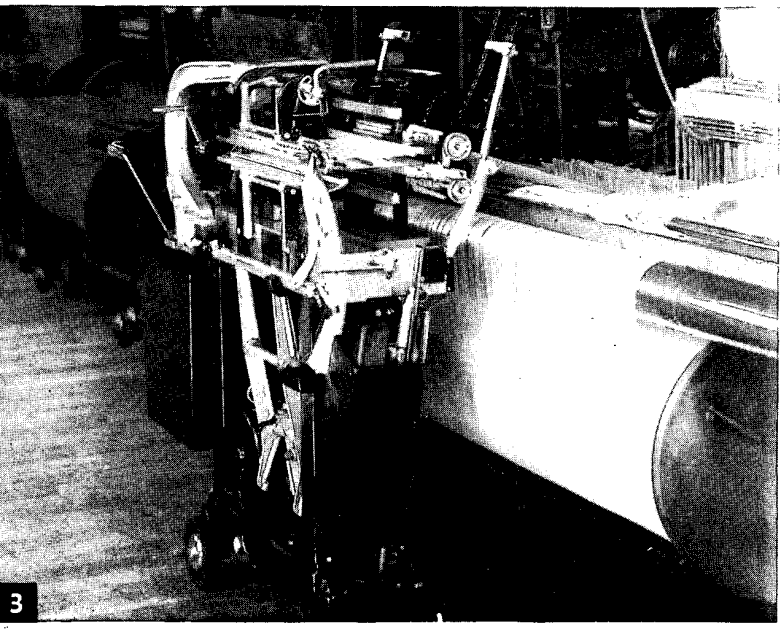
The views shown here demonstrate the flexibility and convenience of the Model L machine for tying-in warp directly behind the loom. It is particularly adapted to close working quarters. These machines are quickly and easily moved from loom to loom in alleys as narrow as 12 inches. Warp ends are tied-in quickly and uniformly, resulting in straight warps and minimum warp replenishment.

The new figure-8 knotter mechanism on the carriage is capable of tying-in a much greater range of yarns than ever before. These include fine crepe, combination novelty, nylon and rayon yarns, with regular and reverse twist.

In the views showing tying-in of a wool warp, a Type 15 LS machine is used. This particular machine is adapted to tying-in wool, worsted, mohair and other difficult yarns. These yarns are easily tied using the figure-8 knotter. In these illustrations, warp threads are selected from an end-and-end lease, providing perfectly straight warps. The view showing the wool warp completely tied-in demonstrates important time and labor savings realized from tying-in a new beam with the old warp, directly behind the loom. This eliminates an operation for resetting weaving elements when a warp runs out.

Tying-in a variety of fine to coarse yarns is arranged on these models by simply changing the knotter heads on the figure-8 mechanism. This change can be made by an experienced operator in one or two minutes.

Further information will be furnished on request.



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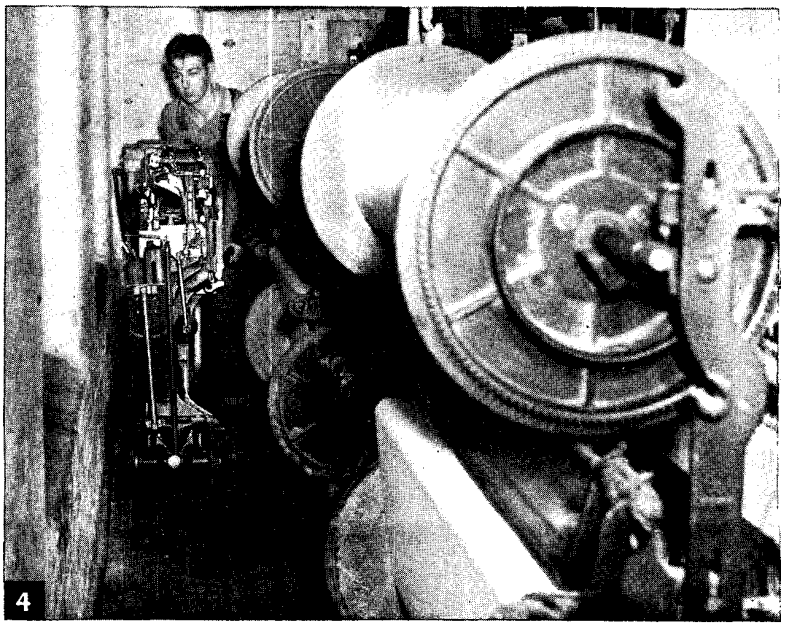

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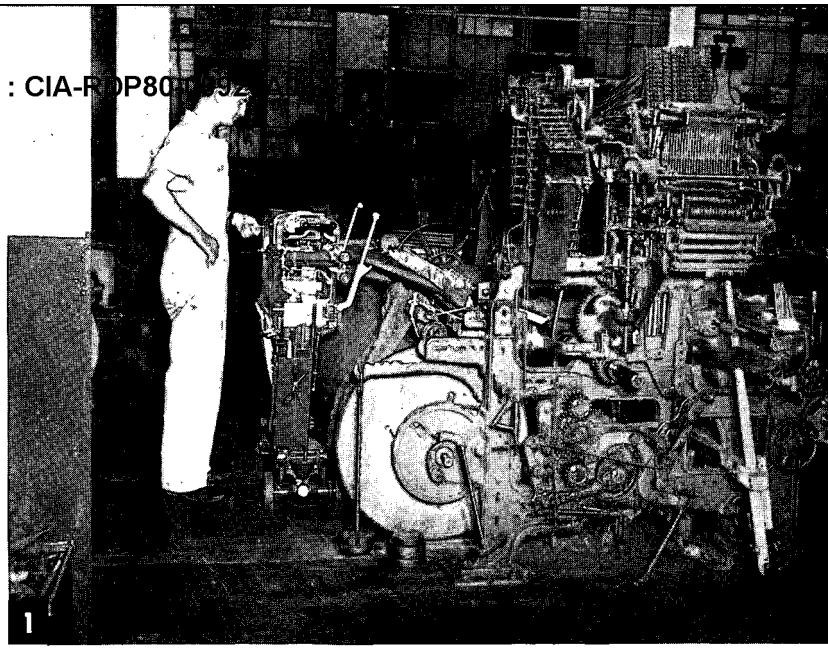
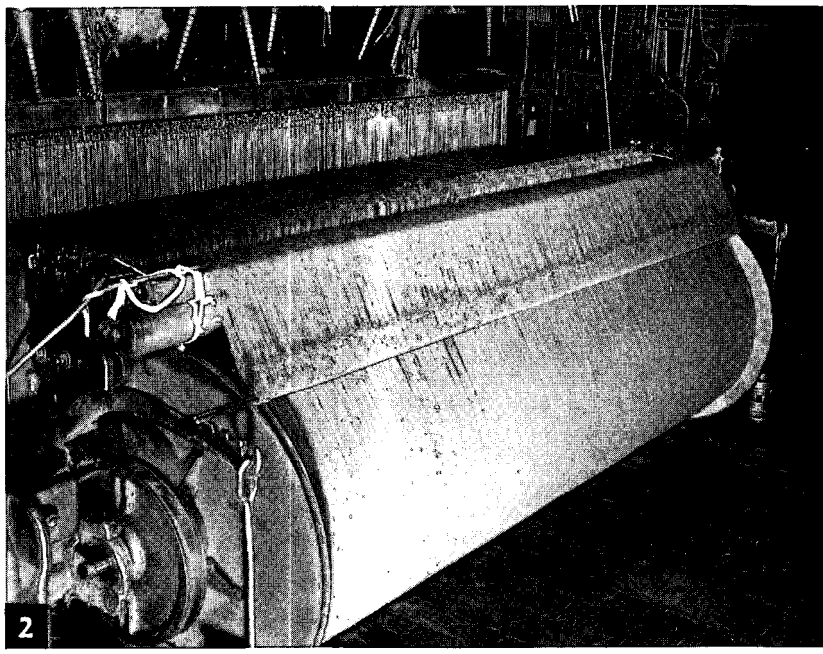


1 This view shows the Model 15 LS Warp Tying Machine in action on a "bite" or section of warp wool. A range of ¾ run wool and up can be tied on this machine.

2 This view shows a side wool beam completely tied-in and the knotted sections are ready to be pulled through the weaving elements.

BARBER COLMAN®

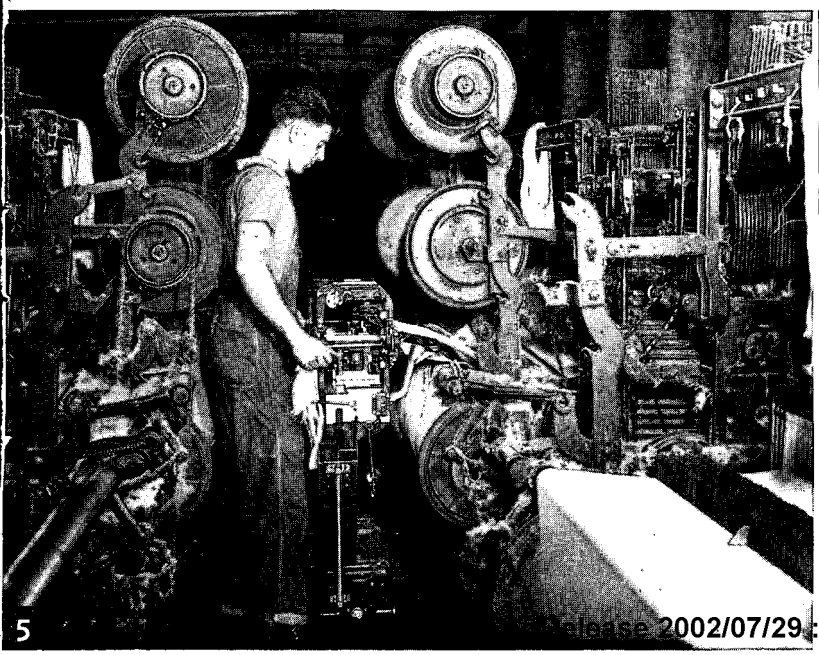


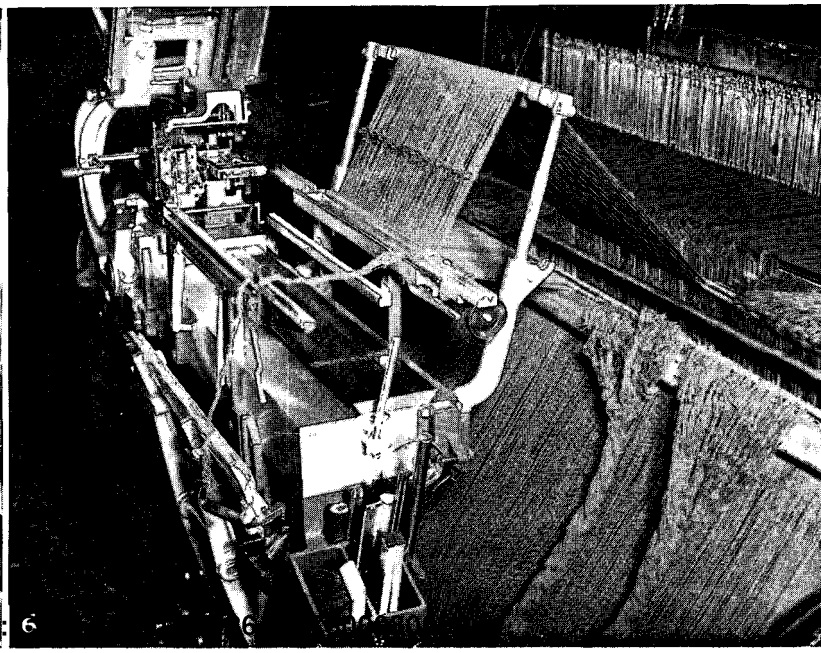
3 Here we show a comparatively simple installation which allows ample room for manipulating the Portable Warp Tying Machine directly behind the loom.

4 The ability to operate a Portable Warp Tying Machine in seemingly inaccessible places is clearly shown. Tying-in under such conditions presents no difficulties for these machines.

5 This view shows the "bite" or section has been completely tied and is about to be cast-off. Note the next bites are separated and ready to be prepared for the continuation of tying-in the full width of beam.

6 This view again shows the machine operating in close quarters as well as the adaptability and application to multiple beam work.

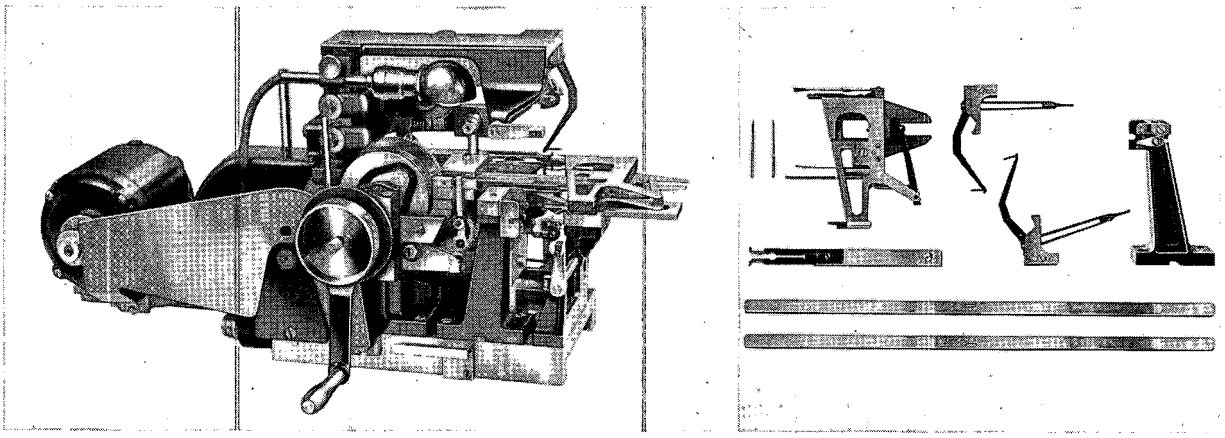




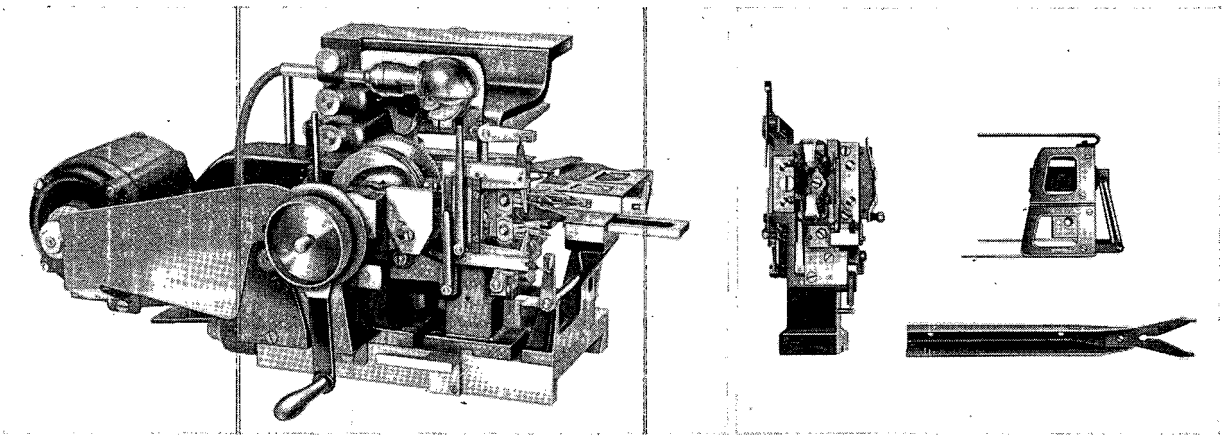
TYPE LL COMBINATION CARRIAGE

for

- TYING-IN FLAT SHEETS
- TYING-IN END-AND-END LEASE



These views show the combination carriage arranged for tying-in from a flat sheet of yarn. Comparatively few parts are necessary to change the carriage as shown, and a competent operator will make this change in a few minutes.



These views show the combination carriage arranged for tying-in from an end-and-end lease. Comparatively few parts are necessary to change the carriage as shown, and a competent operator will make this change in a few minutes.

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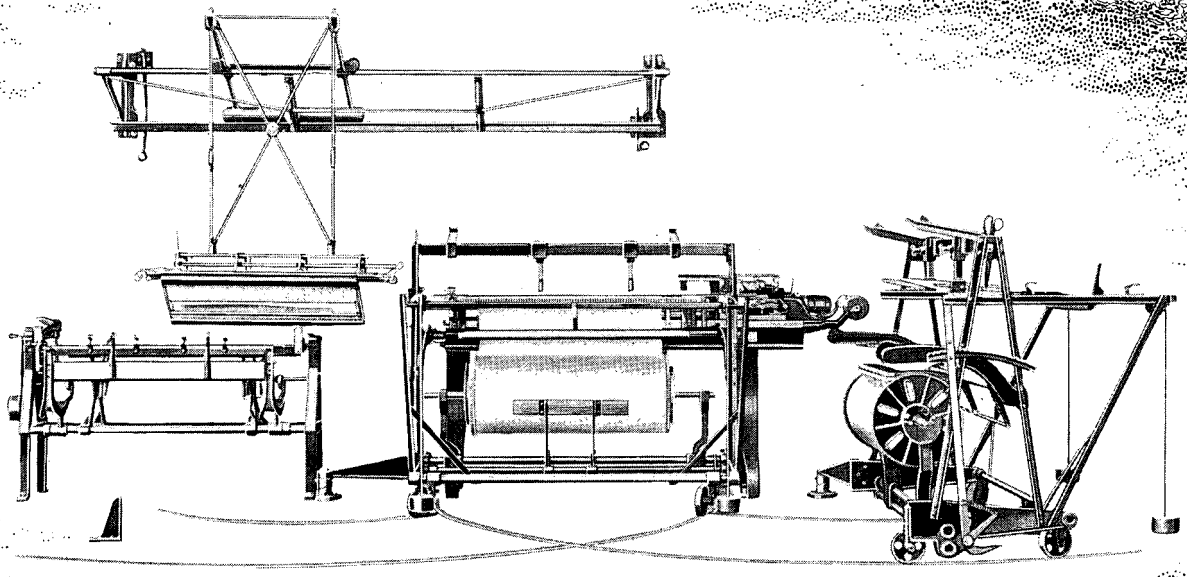
Warp Tying MACHINE

MODEL "EL" STATIONARY



AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP DRAWING MACHINES • TWISTER CREELS

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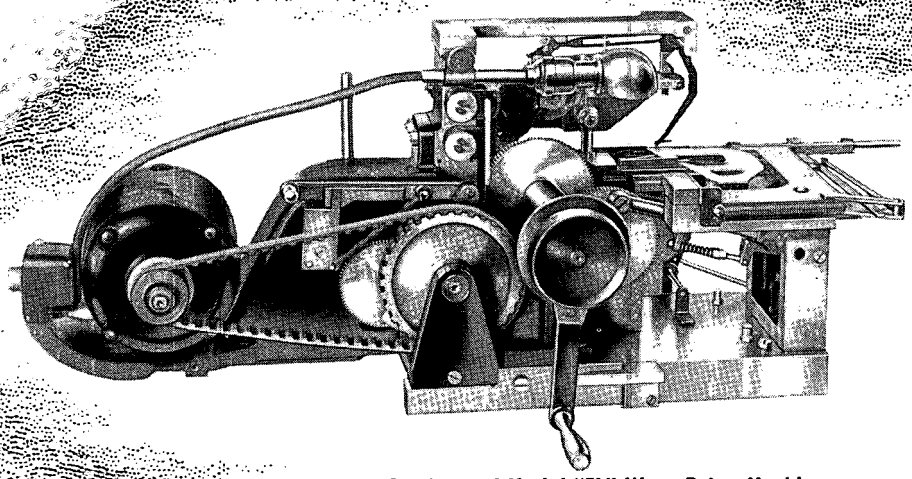
MODEL "EL"



Carriage of Model "EL" Warp Tying Machine

This is a machine for tying in the ends of a new warp to the ends of an old warp automatically, irrespective of the kind and number of harnesses. As will be seen from the illustration on the back page of this circular, the machine consists of (1) the selecting and tying mechanism which travels on a lathe-like bed, (2) two beam trucks which are pivoted and move on semi-circular tracks, (3) a loader over which the yarn in the set of harnesses is prepared for tying, and (4) the overhead carrier which is fixed upon the wall. The overhead carrier enables the old warp to be easily moved from its position in the loader to its position on the bed preparatory to tying.

Briefly, the method adopted is to so clamp the old and the new warps as to hold them in two parallel sheets, supported in planes one above the other, the old warp being uppermost.

The carriage containing the tying mechanism travels along the bed, picking consecutive threads from each sheet of warp. These ends are then tied together. The machine will not tie a knot if a thread is missed by the selector, but after five attempts to obtain the missing thread it will stop automatically. When the knots are made they are all uniform in size with ends closely sheared, the shearings being mechanically expelled into a suitable receptacle at the end of the carriage.

The object of having two beam trucks is to avoid keeping the machine waiting between the finishing of one warp and the beginning of the next, so that while the machine is tying, the helper can be preparing another beam in which-ever truck is available. In this way the trucks are used alternately and the time lost is reduced to a minimum.

No mechanical alterations on the machine are necessary when changing from one "style" to another should the difference consist only in the number of threads per inch, or in the number or kind of harnesses or banks of drop wires. For a change in counts of yarn, the two selectors may require changing, this operation being very similar to changing two needles in a sewing machine without the necessity of rethreading. Ordinarily it is found advisable to use artificial humidity as would be necessary in weaving.

The amount of floor space required for each size of machine, including the working space recommended, together with the approximate weight of the machine, is shown in the accompanying floor plan and table.

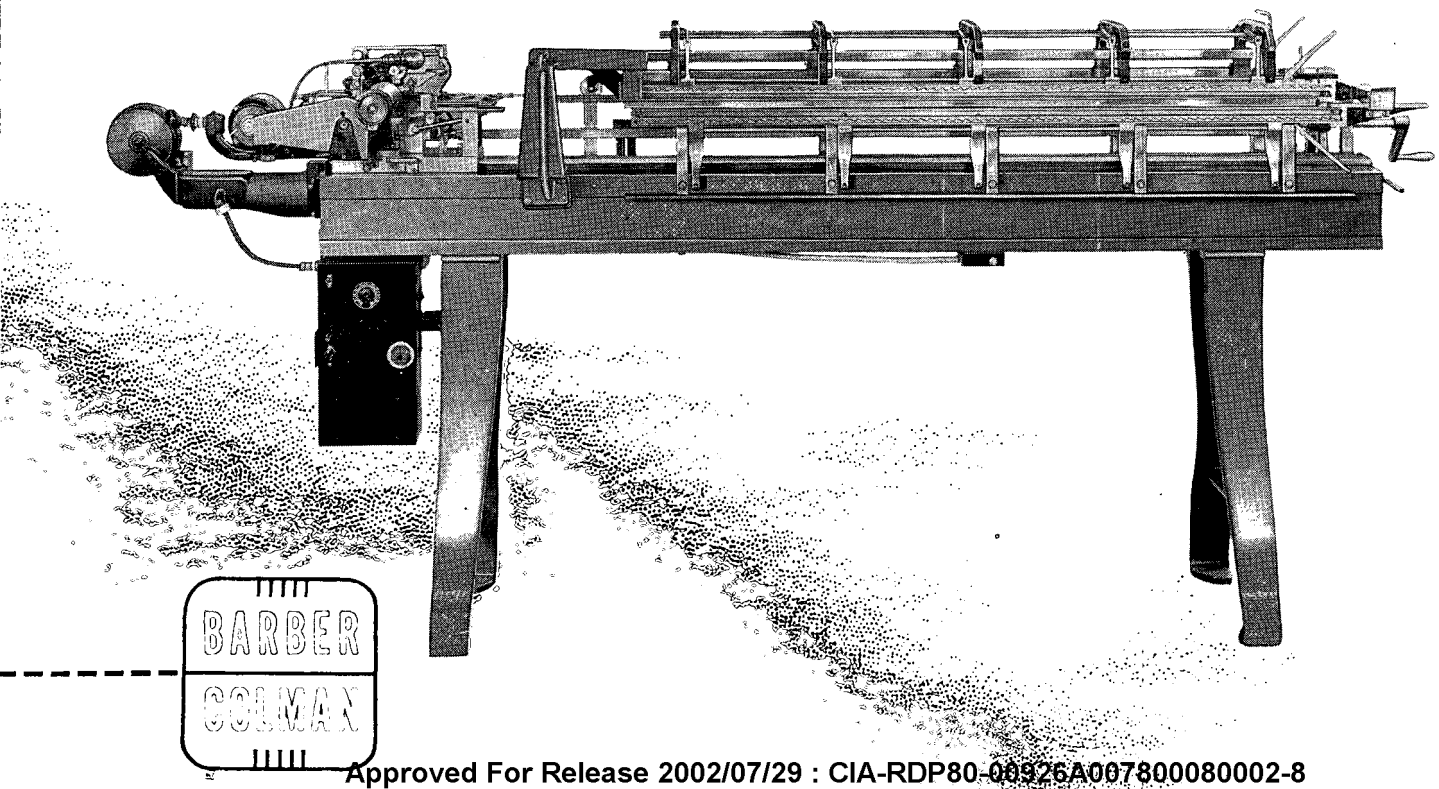
WARP TYING MACHINE

MODEL "EL" STATIONARY

The post war period has shown that the trend is more toward fancy patterns which necessitates a greater number of weaving elements in the loom, that is, harness and banks of drop wires (automatic stop motion).

This change has presented a problem of choosing between our Stationary and Portable Warp Tying Machines so as to obtain the maximum efficiency as well as a satisfactory return on your investment.

For weaves requiring over 6 harness and several banks of drop wires we suggest that consideration be given to our Portable Warp Tying Machines. To weave quality cloth extreme accuracy is required to regait any number of harness. Obviously the greater the number of harness required the greater the time in the regaiting process. Likewise it is necessary to properly align a reed in order to weave quality cloth. When the same reed remains in the loom for a long period of time it does not become warped or twisted as in the case where the reed is continuously being changed. Consequently, when the Portable Warp Tying Machine is used, there is less wear and tear on the reeds and shuttles. The regaiting of the modern built steel heddles and frames is a factor to consider in choosing between the Stationary and Portable Warp Tying Machine.



FLOOR PLAN AND SPECIFICATIONS

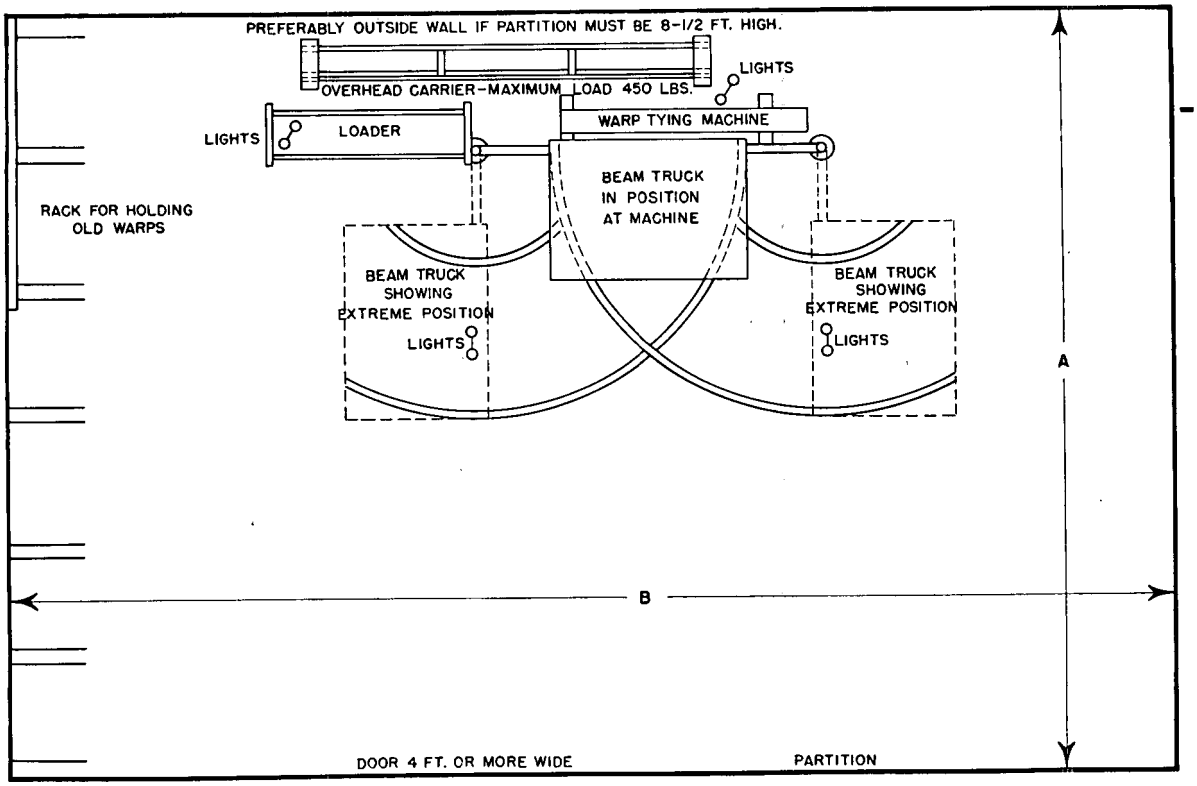


Diagram of Floor Space Required

Recommended Working Space

Machine Size (Maximum Warp Width Capacity)	A (Above)	B (Above)	Approximate Weight of Machine
46" or 117 Cm.	18' or 549 Cm.	28' or 853 Cm.	2560 Lbs. or 1161 Kilo
56" or 142 Cm.	20' or 610 Cm.	30' or 914 Cm.	2640 Lbs. or 1234 Kilo
66" or 168 Cm.	22' or 671 Cm.	32' or 975 Cm.	2875 Lbs. or 1331 Kilo
76" or 193 Cm.	24' or 732 Cm.	34' or 1036 Cm.	3200 Lbs. or 1452 Kilo
86" or 218 Cm.	25' or 762 Cm.	36' or 1097 Cm.	3560 Lbs. or 1615 Kilo
96" or 244 Cm.	26' or 792 Cm.	38' or 1158 Cm.	3875 Lbs. or 1758 Kilo
106" or 269 Cm.	28' or 853 Cm.	40' or 1219 Cm.	4050 Lbs. or 1837 Kilo
116" or 295 Cm.	30' or 914 Cm.	42' or 1280 Cm.	4200 Lbs. or 1905 Kilo

MOTOR SPECIFICATIONS

110 or 220 V AC or DC. Requires one operator and one helper.

CAPACITY

Production: 9000 to 11000 ends per hour. Under average conditions the machine will tie-in a warp of 2000 ends every eleven minutes. When the warp is removed from the machine, it is ready for the loom. Machine speed 250 to 300 knots per minute.

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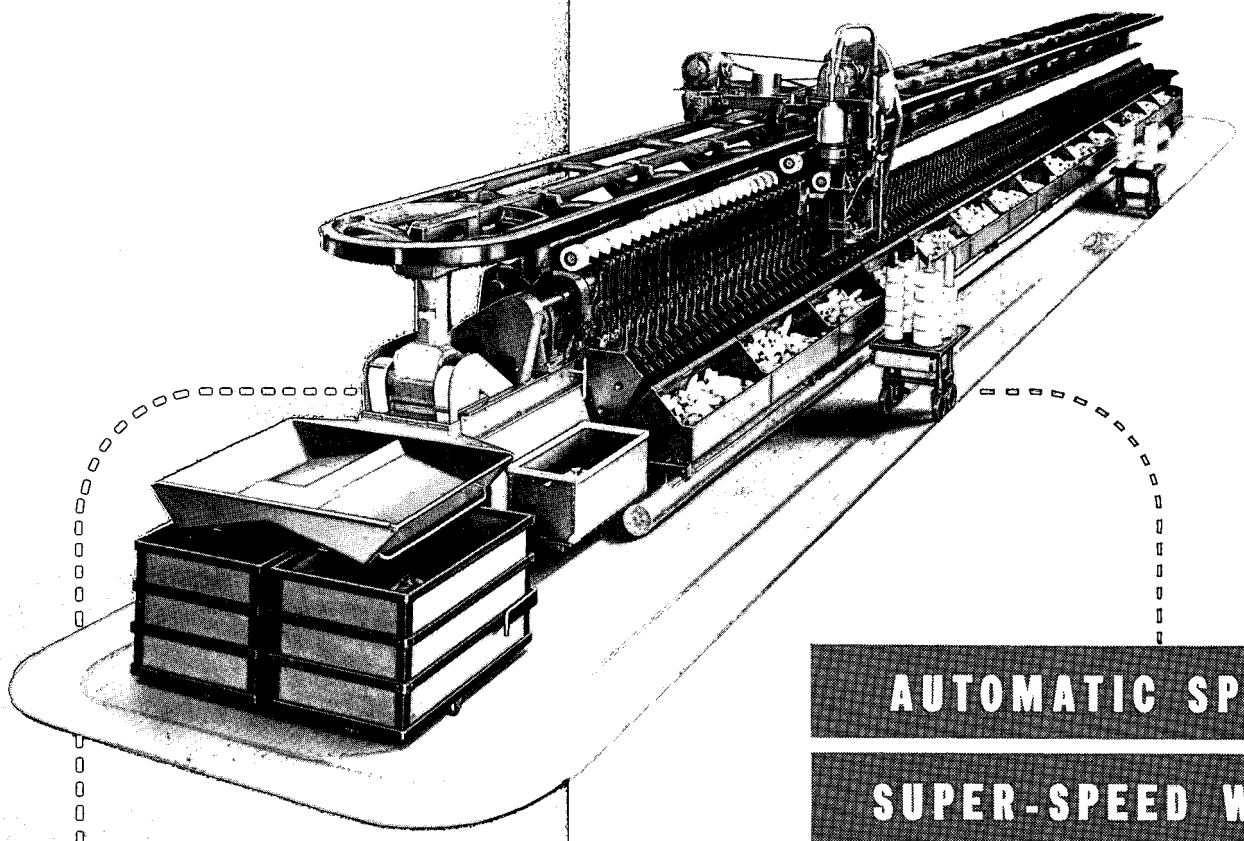

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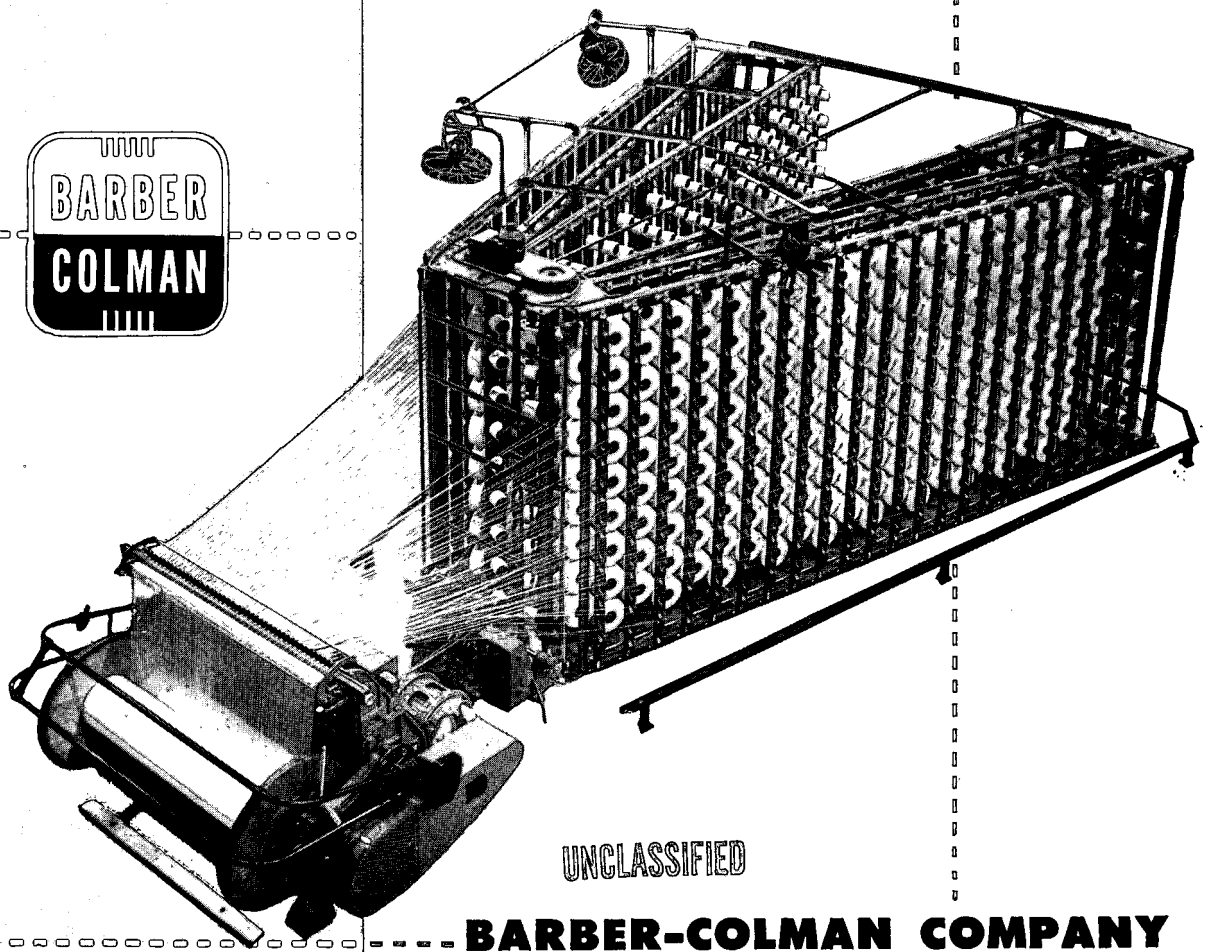
SUPER-SPEED WARPERS

BARBER COLMAN



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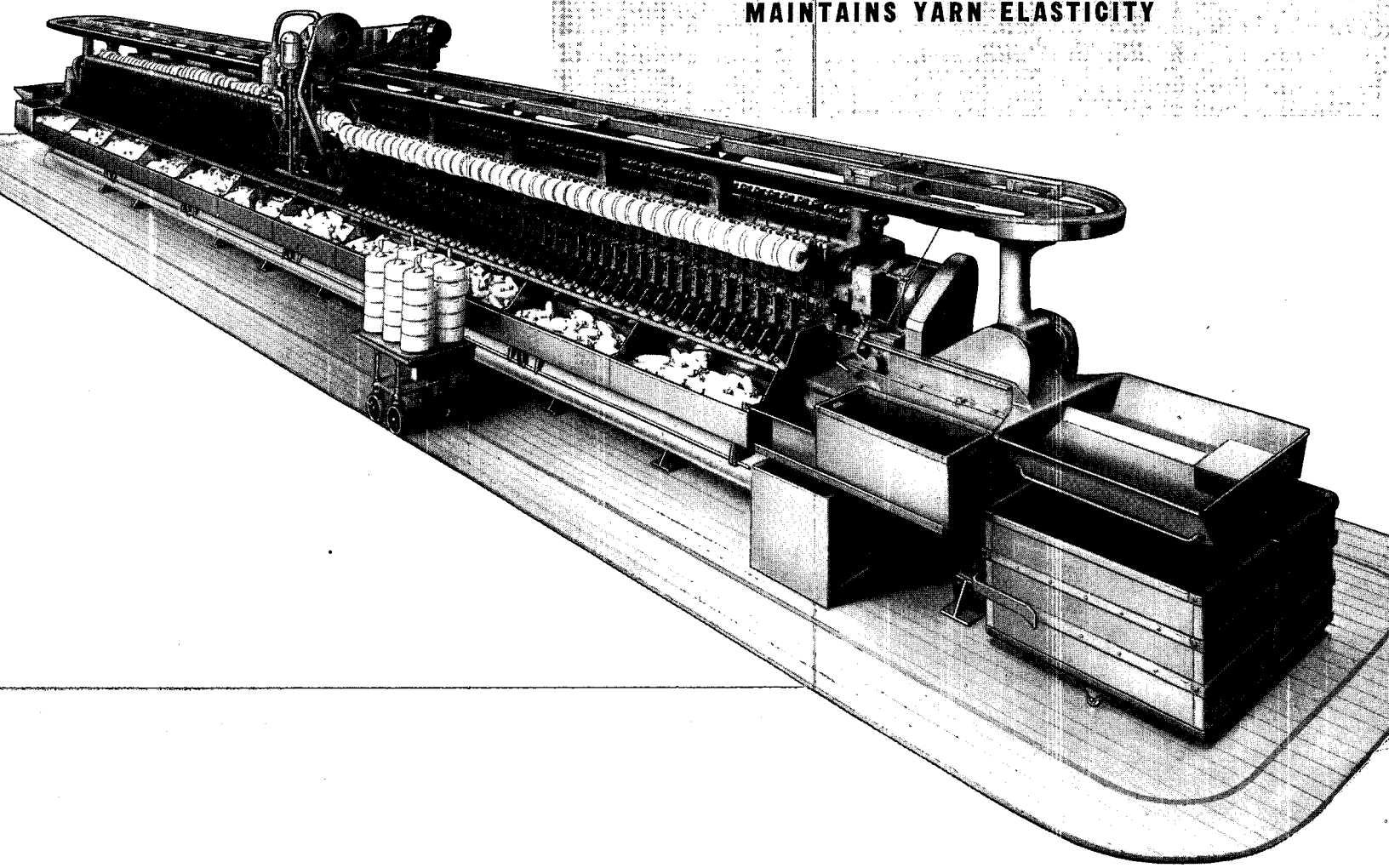
ROCKFORD, ILLINOIS, U.S.A.

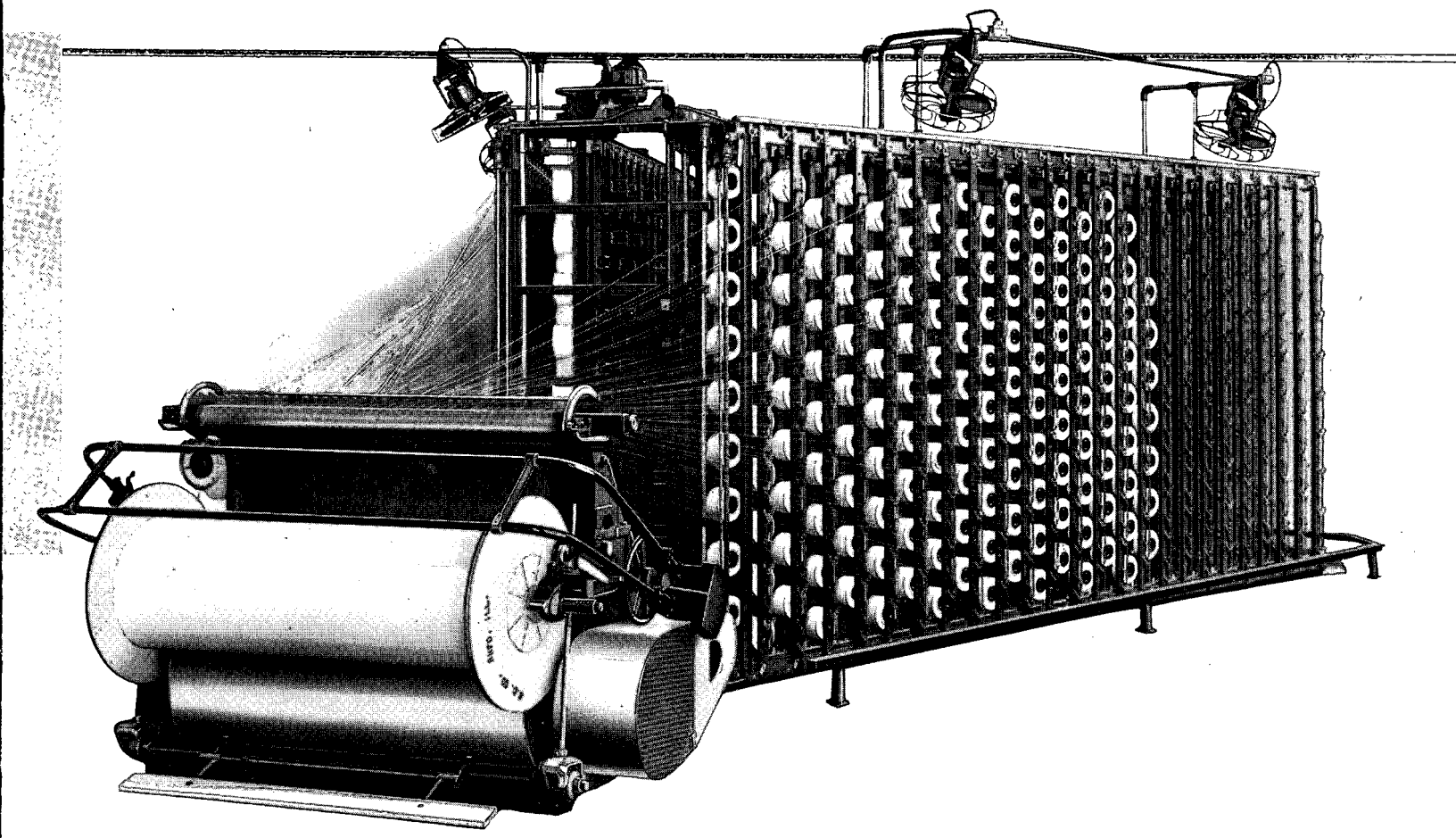
the BARBER-COLMAN SYSTEM OF

REDUCTION IN COSTS
HIGHER LOOM EFFICIENCY
SUPERIOR YARN CLEANING
HIGH PRODUCTION
FLEXIBILITY
EASE OF OPERATION
MECHANICALLY-TIED WEAVERS KNOTS
MAINTAINS YARN ELASTICITY



MORE THAN 85% OF THE LOOMS IN THE UNITED STATES WEAVE

SPOOLING AND WARPING



The development of the Barber-Colman Automatic System has practically eliminated the human element in spooling. The operator of the spooler is required only to place bobbins in position to be handled by the automatic mechanisms and to remove full packages. Machines are not subject to such human characteristics as fatigue, carelessness, indifference or the errors that are frequently found on manually operated machinery. The operations performed by the workers on these machines are extremely simple.

Work is of high quality, with only reasonable supervision required, and such production is continuous, at great reduction in cost.

FROM WARPS PREPARED BY THE BARBER-COLMAN SYSTEM

savings.. IN

SPOOLER AND WARPER ROOM

Only about half as many employees are required to handle the same amount of yarn by the Barber-Colman system as with systems depending on hand-operated spoolers and winders. This reduction in the number of employees required not only results in a decreased cost per pound but releases labor which may be used to advantage in other departments.

WEAVE ROOM

Thorough tests covering long periods of time made in the weave rooms of several well-known mills prove that yarn spooled and warped on Barber-Colman machines weaves with less breakage and with a higher percentage of production than yarn spooled and warped on other systems.

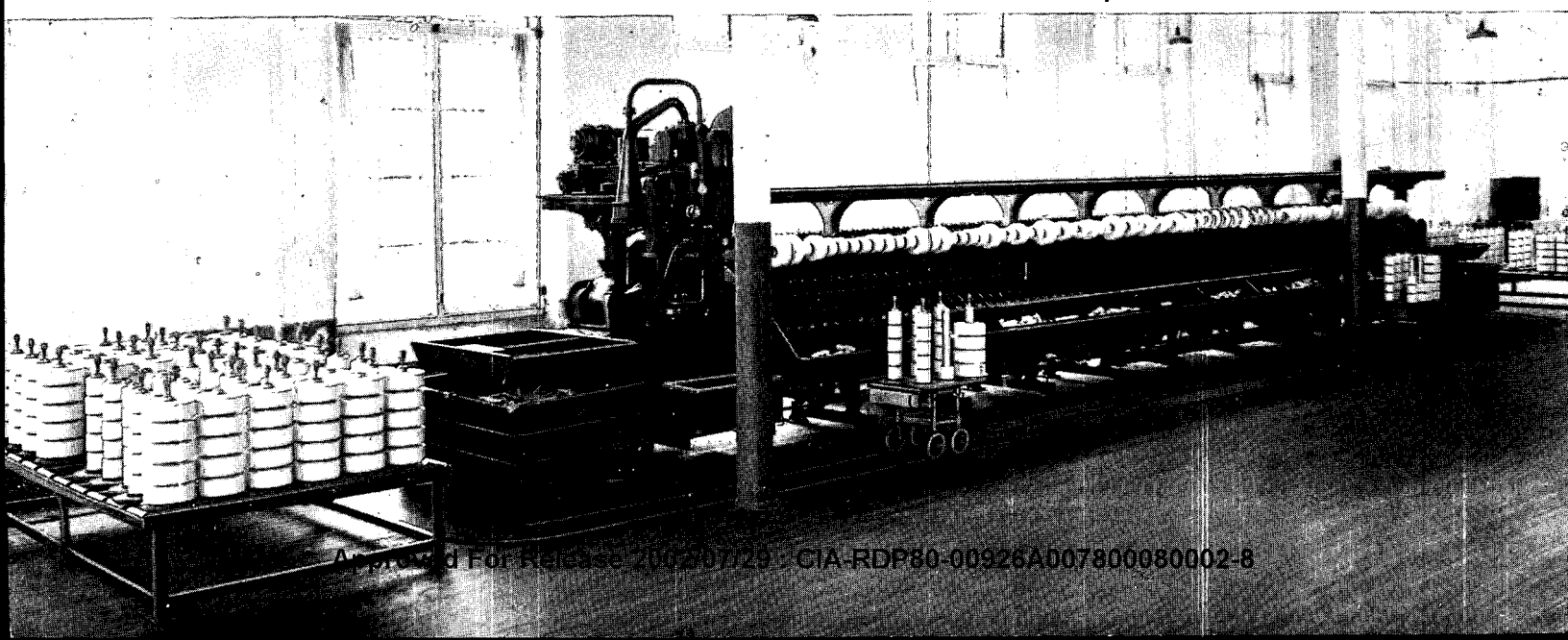
TWISTER ROOM

In yarn mills or other mills where twisting is done, better quality yarn produced by the Barber-Colman system results in better running twisters. Because of fewer ends down, labor is reduced and fewer twisters are required.

YARN IN PROCESS

The use of Barber-Colman machinery results in a large reduction of yarn inventory in the spooling and warping departments. The amount of yarn in process is reduced from 50% to 75%, as compared with the amount necessary when using ordinary machinery.

4-Count Automatic Spooler Installation



MILL OPERATION

LESS FLOOR SPACE REQUIRED

Considerably less floor space is required for the Barber-Colman system than for the other systems. In mills already built this released floor space can usually be used to considerable advantage. In new mills, advantage can always be taken of this saving in floor space to reduce initial plant investment.

PREPARATION OF AN ESTIMATE

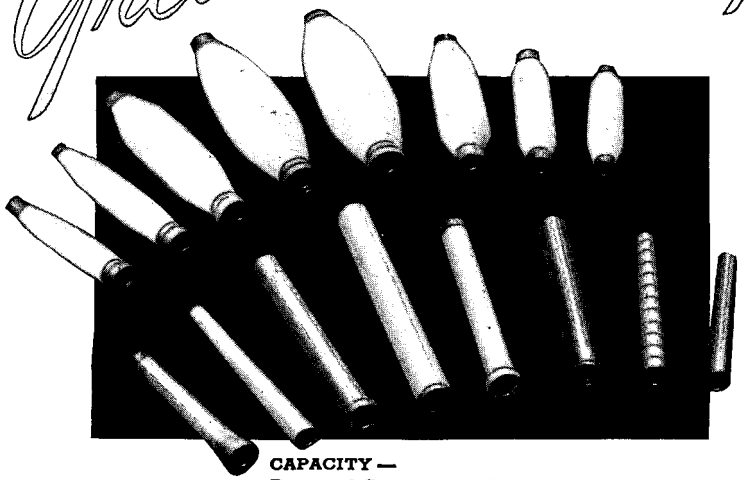
At no obligation to the mill and using data obtained from the mill, Barber-Colman Company will prepare an estimate to show the equipment required and possible return on investment from the installation of the Barber-Colman system.

In most cases with the installation of Barber-Colman machinery, a mill may expect a return of at least 25%, and some mills have paid for their machines in one year.

TYPICAL EXAMPLE

Labor Cost per pound with Barber-Colman Machinery	2.0346¢
Labor Savings Per Pound	1.5553¢
Weekly Labor Saving	$574.95
Estimated Annual Labor Saving	$29,322.45

Greater Flexibility



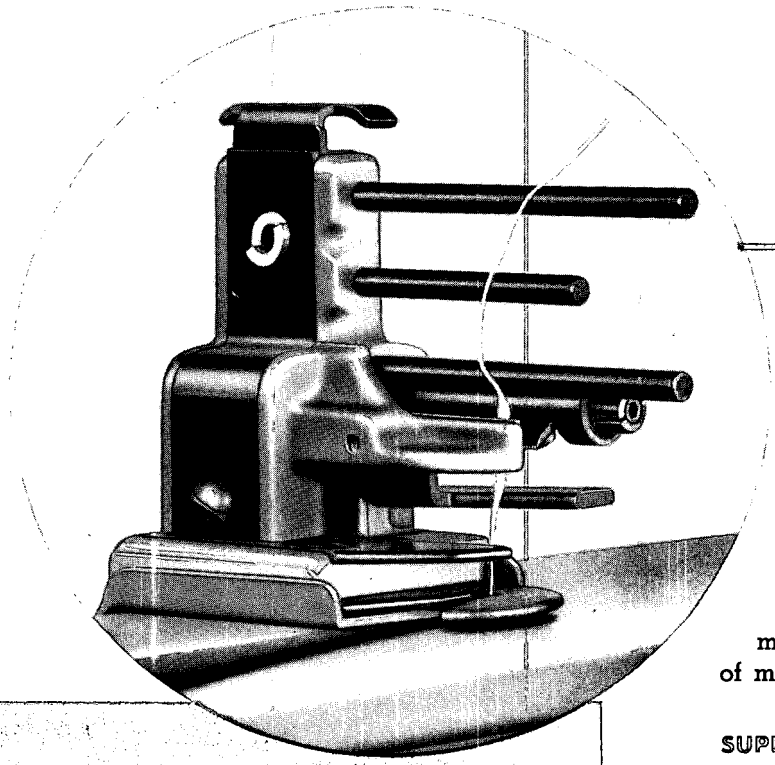
CAPACITY —
Range of Counts — 3-1/2's to 125's
Winding Speeds — 700 to 1200 r.p.m.
Range of Bobbin Lengths — Paper to 10-1/2
Wood to 10-3/4

THE SPOOLER

The traveler on the Automatic Spooler can be set to wind different size cheeses on each quarter of the machine. Thus, four different counts or kinds of yarn can be spooled on one machine at the same time. Only a few minutes are required to change counts and snick plate settings.

THE WARPER

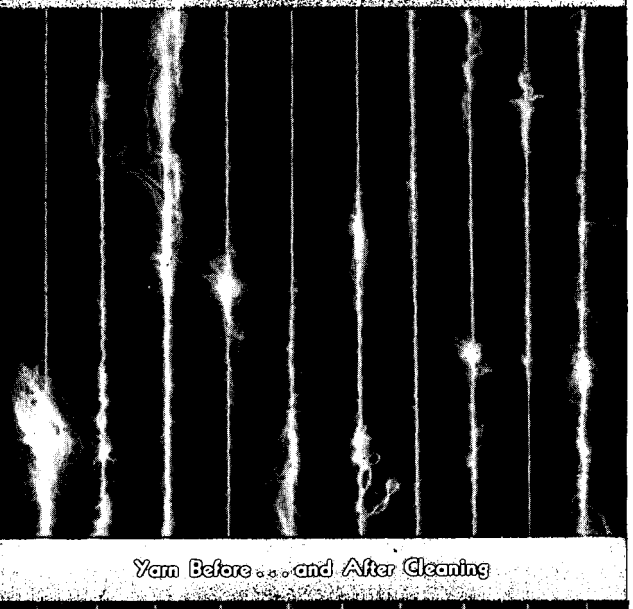
The number of ends on the Super-Speed Warper are changed very easily, which makes it possible to change patterns or get out short orders in much less time than by other methods. The creel girl loads the creel with the next set of cheeses while the warper is running. Changes of yarn or the number of ends may be made on successive beams without loss of time. On one Barber-Colman Warper it is possible to warp section beams, dye beams and balls.



IMPROVED

The object of the spooling and warping process is to combine numerous short threads into fewer long ones, and then to assemble these long threads into sheets. If this is not carefully done, the yarn may be seriously injured, weakening it so that it will not weave as well and the resultant cloth will be of poorer quality. The design and construction of Barber-Colman machines keeps the yarn tension low and results in yarn of more even quality than that wound by other systems.

SUPERIOR YARN CLEANING In most cases it is desirable to break out gouts, bad piece-ups, thick places and wild yarn, which may later cause loom stoppage or defects in the cloth. Barber-Colman Automatic Spoolers are equipped with automatic cleaning devices, known as snick plates. These snick plates remove foreign matter and imperfections without injury to the yarn. Their efficiency is highly regarded where production of quality yarn is required. Constant improvement in the design of this unit has assured maximum efficiency in removing undesirable matter.



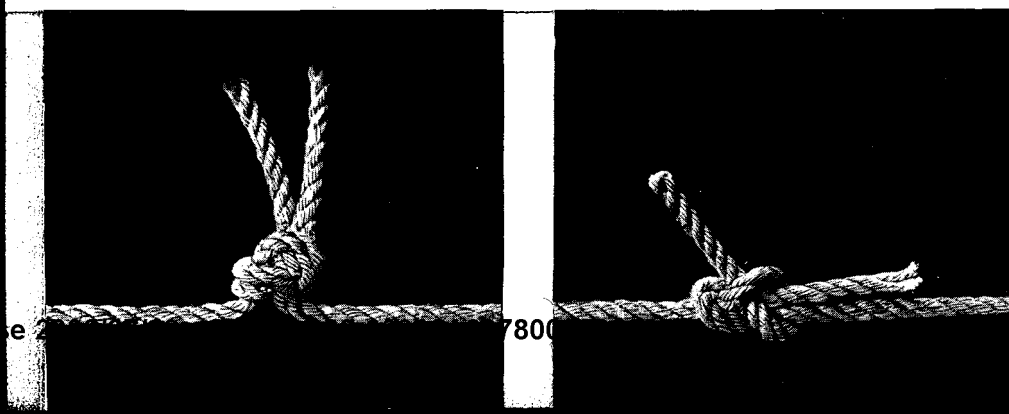
Yarn Before . . . and After Cleaning

LESS YARN BREAKAGE Loom beams from Barber-Colman Warpers weave with less breakage than those from ordinary beams. Low, uniform tension on the yarn provides equal stretch to all strands and preserves elasticity for better strength to stand the load at the loom. Less breakage at the Warper results in better work at the slasher and straighter warps at the loom.

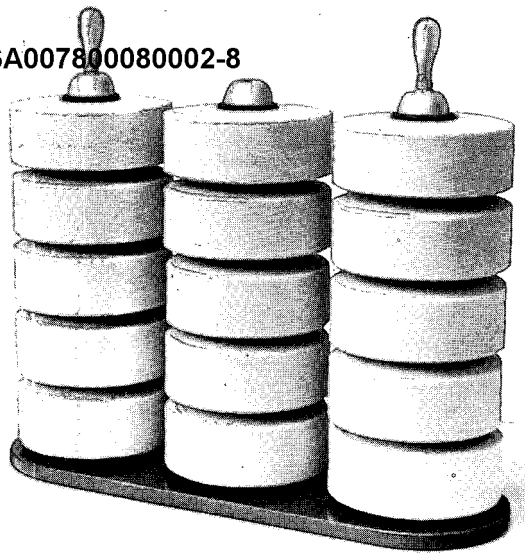
High quality yarn, mechanically-tied weaver's knots, elimination of spooler kinks and removal of imperfections combine to reduce loom stops and seconds in the cloth room.

Round Knot

Weaver's Knot

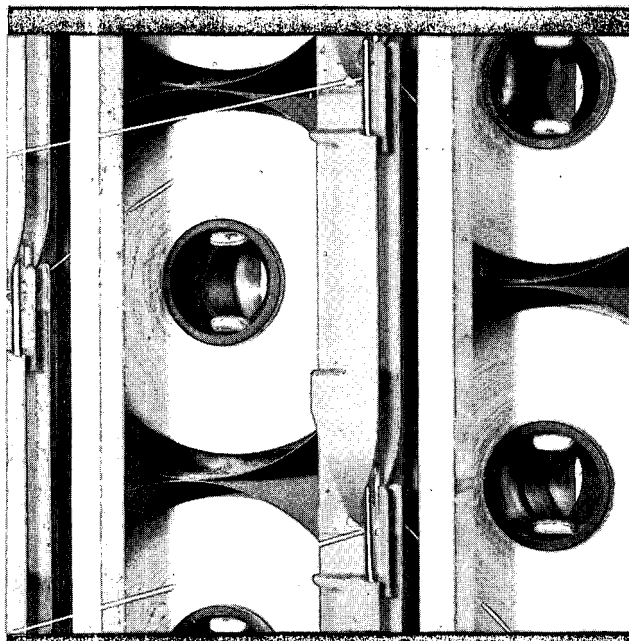


YARN QUALITY



NO DAMAGE TO YARN FROM HANDLING To facilitate handling the yarn from the Spooler to the Warper or Twister without damage, a cheese carrier is used. This consists of a base with three metal spindles, slightly less in diameter than the inside of the sleeves or wooden cores on which the cheeses are wound. This carrier is known as a "trident" and holds fifteen cheeses.

The cheeses, handled on tridents, are much less liable to injury than by other methods where spools may be thrown into boxes or roughly handled, damaging the yarn.

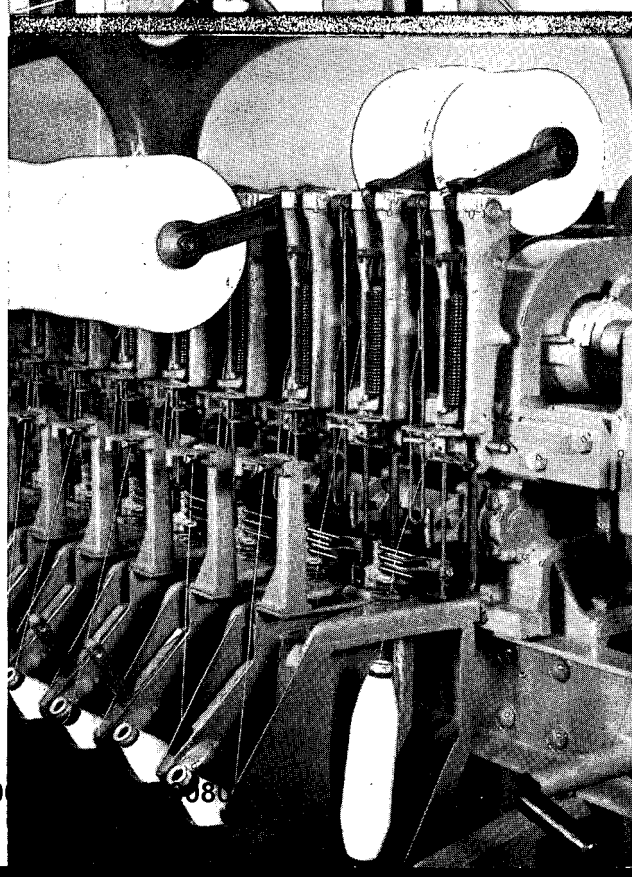


LOW, UNIFORM YARN TENSION There is minimum tension on yarn handled by the Barber-Colman system of spooling and warping. On the Spooler no tension is applied to the running thread except that which is caused in winding off from the bobbin and from air friction.

No tension is applied to the yarn on the Super-Speed Warper except that created as the yarn comes off the cheese overend. Air is the only element that adds friction, and this provides uniform tension equally to all running threads resulting in superior beams. As a result of minimum uniform tension, the strength and life of the yarn are fully preserved for the loom.

THE WEAVER'S KNOTTER The advantage of weaver's knots and their importance in processes following spooling are generally recognized throughout the textile industry. More uniform distribution of the mass of the knot around the yarn, less bulk and decreased tendency to slip, allow the weaver's knot to pass more readily through harness eyes and reed dents. The result is fewer loom stops.

This type of knot also passes more freely though the eyes of needles when the yarn is used in knitting machines. Knots with short ends bury themselves more completely in cloth than those having long ends. Long ends on knots frequently cause many loom stops due to tangling with adjacent threads. This is especially true on certain classes of work such as leno weaves. The present weaver's knotter is standard equipment on Automatic Spoolers. It ties knots with short ends, is entirely mechanical and is not subject to the variations found in hand-operated knotters.



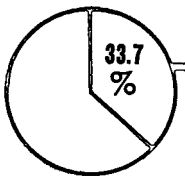
Less WARP BREAKAGE Reduced LOOM STOPS

Experience shows a great part of loom stoppage is due to kinks and subsequent warp breakage. On the Automatic Spooler, knots are tied and slack controlled automatically, eliminating the factor of variable skill. This control has reduced spooler kinks in actual installations by as much as 90%.

In studies under actual working conditions over a period of nine years, a reduction of at least 25% in loom stops has been proved as a result of installation of Barber-Colman Spooling and Warping. 92.2% of the reduction in these stops is due to automatic spooling, while 7.8% is attributed to high speed warping. Weaving mills have reported increases in loom efficiency ranging from 1.25% to as much as 12%. This improvement in production is accounted for by elimination of spooler kinks, slack control, low uniform yarn tension and subsequently less warp breakage.

Increase in loom efficiency and improved cloth means less inspection and reduced seconds.

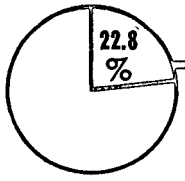
INCREASED OUTPUT THROUGH FEWER LOOM STOPS



FEWER STOPS WITH BARBER-COLMAN WARPS

MILL A
82 Week Test — 18,595 Loom Days — Equivalent 38 Looms On Each Side Running The Entire Time

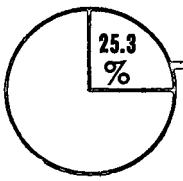
	Ordinary Warps	Barber-Colman Warps
Number of Stops.....	116,502	77,241
Average Stops per Loom per Day.....	6.265	4.154



FEWER STOPS WITH BARBER-COLMAN WARPS

MILL B
259 Week Test — 33,645 Loom Days — Equivalent 22 Looms On Each Side Running The Entire Time.

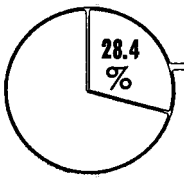
	Ordinary Warps	Barber-Colman Warps
Number of Stops.....	424,836	327,901
Average Stops per Loom per Day.....	12.627	9.746



FEWER STOPS WITH BARBER-COLMAN WARPS

MILL C
128 Week Test — 16,972 Loom Days — Equivalent 22 Looms On Each Side Running The Entire Time

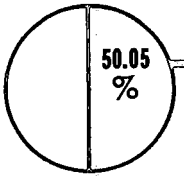
	Ordinary Warps	Barber-Colman Warps
Number of Stops.....	110,960	82,851
Average Stops per Loom per Day.....	6.538	4.882



FEWER STOPS WITH BARBER-COLMAN WARPS

9s YARN — BALL WARPED

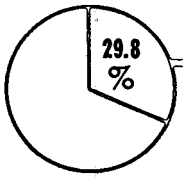
	Ordinary Warps	Barber-Colman Warps
Number of Stops.....	1,382	989
Average Stops per Loom per Day.....	4.11	2.94



FEWER STOPS WITH BARBER-COLMAN WARPS

32s YARN — BEAM WARPED

	Ordinary Warps	Barber-Colman Warps
Number of Stops.....	3,100	1,548
Average Stops per Loom per Day.....	9.81	4.90



FEWER STOPS WITH BARBER-COLMAN WARPS

60s YARN — BEAM WARPED

	Ordinary Warps	Barber-Colman Warps
Number of Stops.....	11,356	7,970
Average Stops per Loom per Day.....	9.39	6.59

Total running time of all three tests was 469 weeks, or a little over nine years, and the average reduction in stops for the entire period was 25.44%.

These tests covering a variety of work indicate, regardless of yarn [illegible] stops may be expected.

SPOOLER PRODUCTION

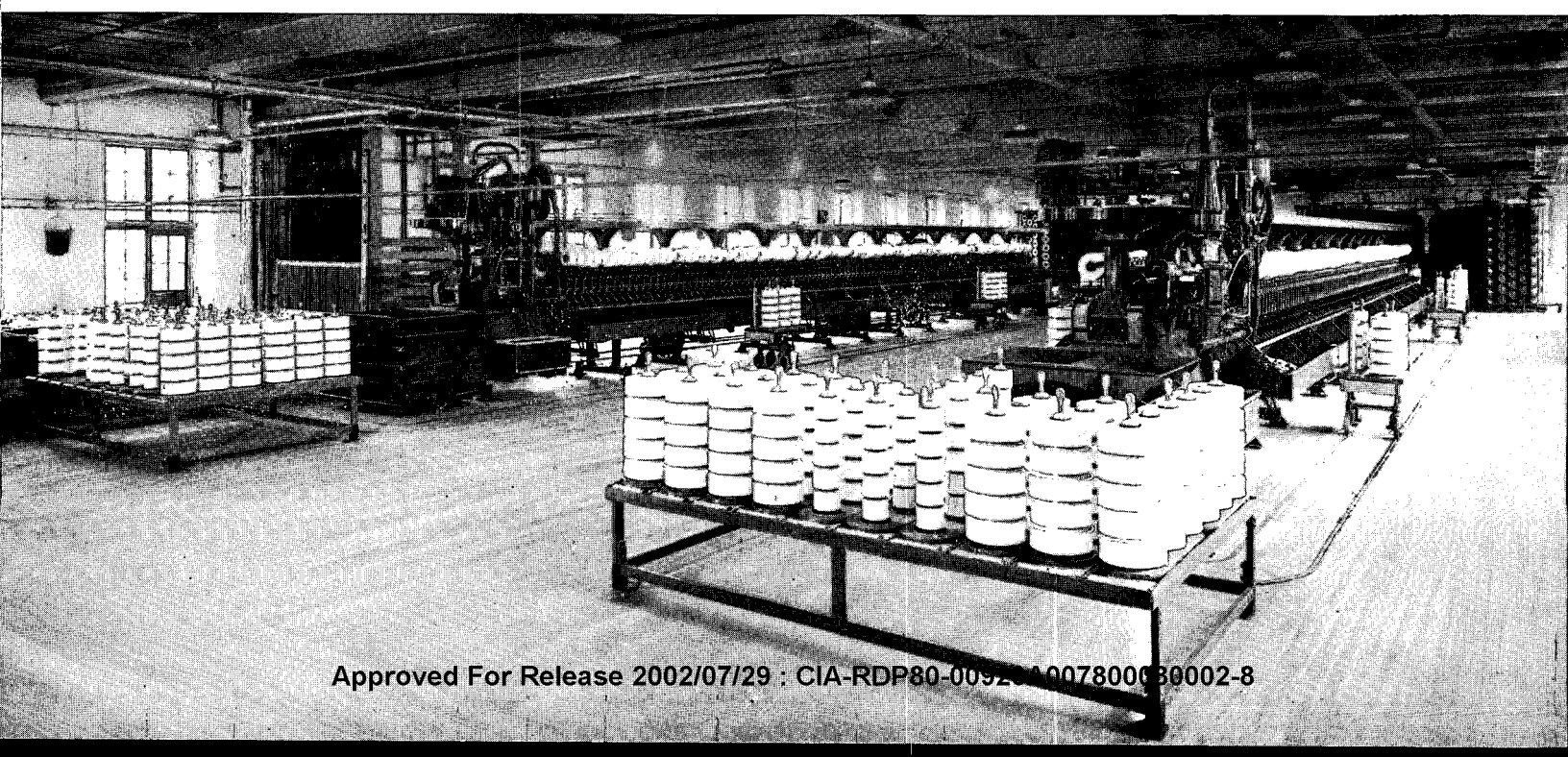
Yarn Number	Ring	Traverse	Bobbins Per Pound	Pounds Per Spindle Per Hour	Pounds Per Girl Per Hour
9s	2-1/2	9″	2.50	4.4	292
13s	2-1/4	8″	3.50	4.5	242
20s	2-1/8	7-1/2	4.75	3.0	178
26s	2″	7″	5.75	2.2	144
30s	1-7/8	6-3/4	6.75	1.8	120
40s	1-3/4	6-1/2	8.00	1.3	96
50s	1-5/8	6-1/4	9.00	1.0	80
60s	1-1/2	5-1/2	11.00	.79	62
100s	1-5/16	5″	28.50	.31	19

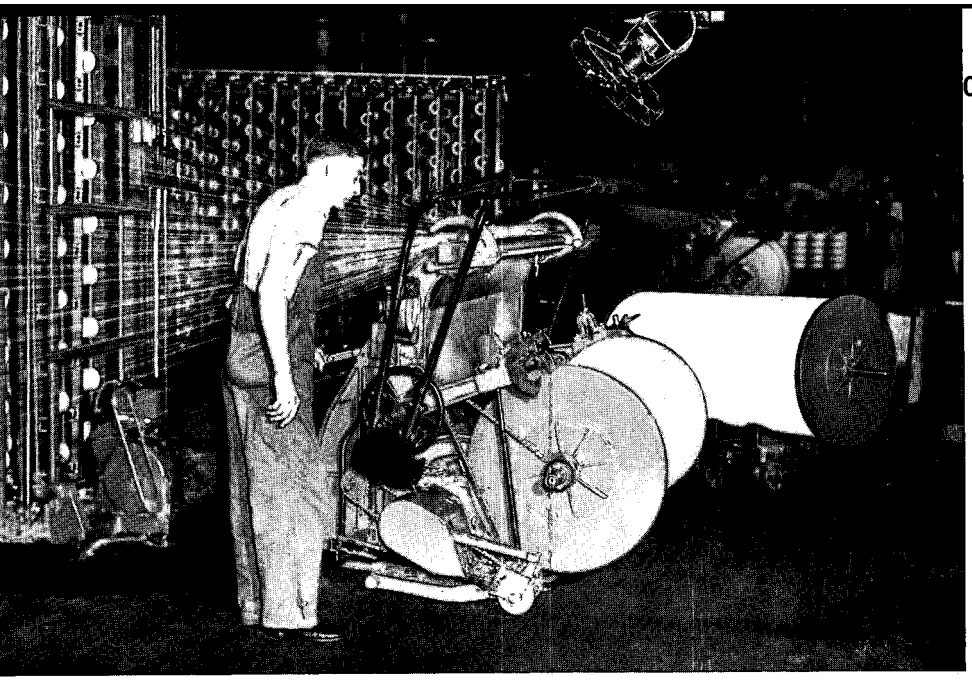
This table shows production which can conservatively be expected per Spooler operator per hour on various yarn counts. These figures are constantly being verified by operating installations, and the spinning information is based on average conditions in a large number of leading mills in the United States and Canada. These figures demonstrate the fact that the pounds of yarn handled by Spooler girls depends almost entirely on bobbin size. Within ordinary limits an operator can handle approximately the same number of bobbins regardless of whether they are large or small. With large bobbins, production in pounds will be correspondingly greater. For this reason, in order to make a reliable estimate as to the probable production in any given case, detailed information must be obtained covering these various factors.

WARPER STOPS

Twenty-two (22) mills operating a total of twenty-nine (29) Super-Speed Warpers on 30s yarn ran 16,105 beams with an average of 13.2 stops per beam. These beams averaged 30,000 yards, 445 ends, 530 pounds, and the average time for filling the beam was 61.3 minutes.

On 21s yarn, eight (8) mills using a total of twelve (12) Super-Speed Warpers ran 4,660 beams with an average of 5.8 stops per beam. These beams averaged 21,000 yards, 445 ends, 530 pounds, and the average time for filling the beam was 34.8 minutes.





Doffing A Full Beam

Ease

Elimination of operator fatigue was a prime consideration throughout the development of the Barber-Colman system. On the spooler, each part is designed so that the operator will have a minimum of lifting, carrying or bending. All operations on a Barber-Colman Spooler, from the start to the finish of each round, are arranged for the ease and convenience of the operator.

Operation of the Super-Speed Warper is arranged for similar convenience.

BARBER COLMAN

Full Cheeses are Placed On Tridents Which are Easily Moved From Trident Table To Creel Truck Without Lifting

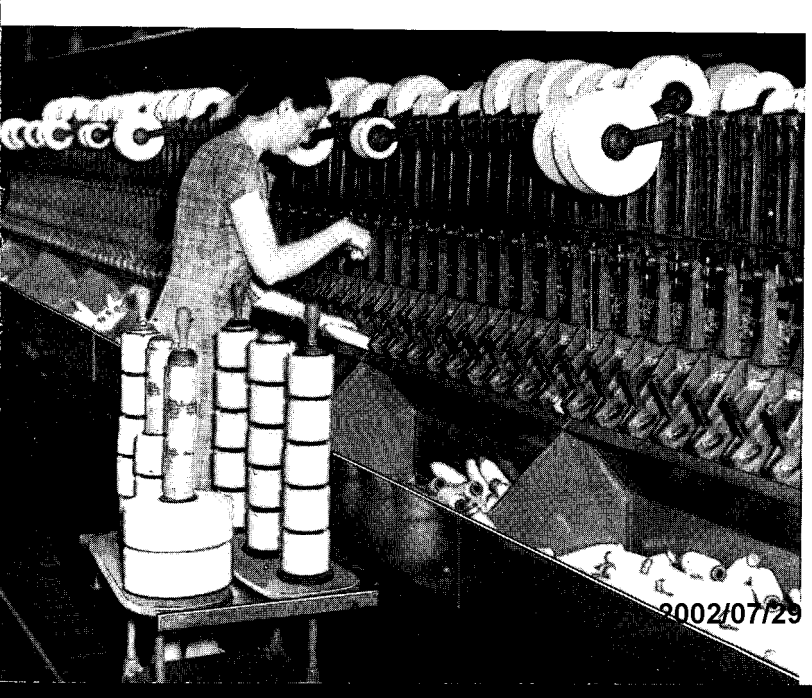
Operator Filling Bobbin Holders, Laying-Up Ends, And Replacing Full Cheeses

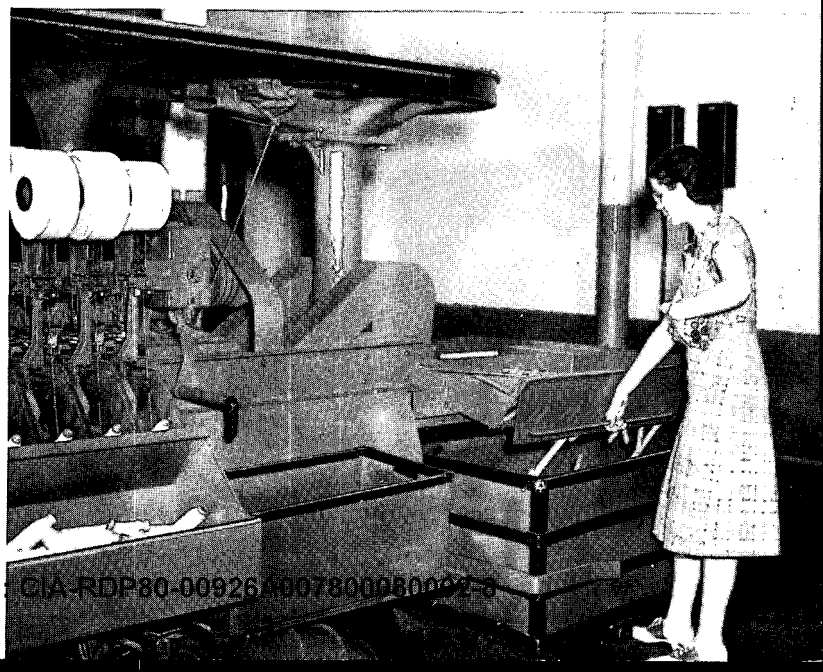
Operator Sorting Bobbins At The Sorting Table

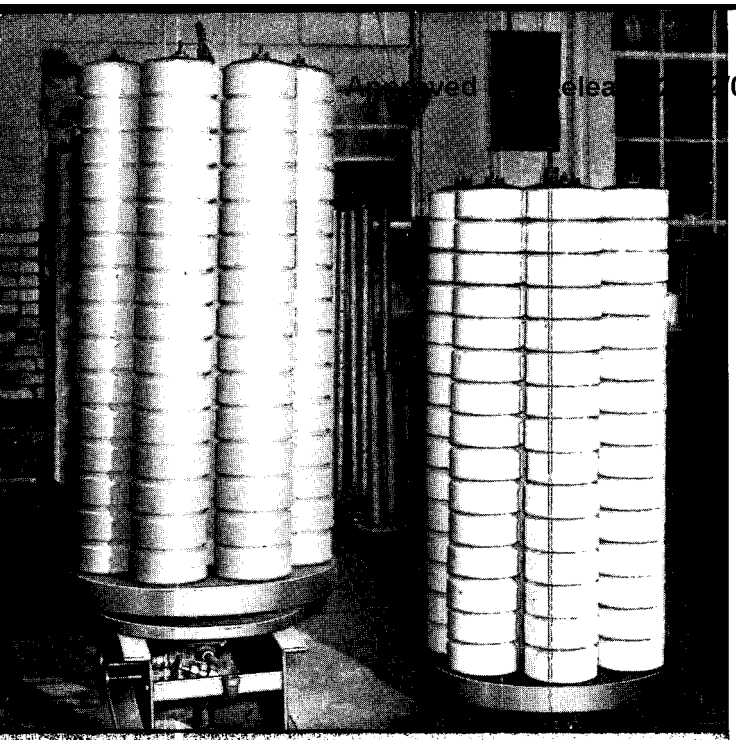
OF OPERATION

On the Barber-Colman Automatic Spooler the only work required of the operator is to fill the bobbin holders, lay up the ends and replace the full cheeses. Cheeses are placed on tridents carried by a small truck running on a track. The spooler is equipped with a trident table the same height as the truck and having a series of rollers on the top to make handling of tridents easier. Empty bobbins, or broken down bobbins, are ejected by the machine to a conveyor which automatically deposits them on a sorting table at the end of the machine. The empty bobbins are dropped into a bobbin truck conveniently placed at the end of the spooler and are then ready to be transported back to the spinning room.

Doffing beams from a Barber-Colman Warper is simple with the beam doffing mechanism that is included on the machine. It is so designed that an operator can easily doff a full beam of yarn onto a beam truck without any lifting.







This shows a dye carrier loaded with full-size Barber-Colman cheeses that have just been dyed and placed on the drying stand. Also shown is a carrier loaded with white yarn ready to be placed in the vat for dyeing.

Applications

YARN MILLS An important application of Barber-Colman spooling is found in yarn mills. All the advantages of yarn cleaning, reduced cost and improved yarn quality produce substantial savings in the spooling, twisting and balling operations. Many yarn mills are taking advantage of reduced spooling costs as offered by the Barber-Colman system and are backwinding from cheeses to sale cones.

CHEESE DYEING The cheese made on the Automatic Spooler has proven to be an excellent type of package for dyeing purposes. Barber-Colman dye cheeses are being used with much success in leading mills making toweling, fine shirting and broadcloth. Using direct, vat, napthol and sulphur dyes, uniform penetration of the dye liquor is obtained making it possible to do excellent work on pastel shades as well as dark colors.

The stainless steel dye sleeve is interchangeable with the standard "C" type bakelite sleeve used on the Automatic Spooler and Super-Speed Warper. This makes it possible to run either the dye sleeve or standard bakelite sleeve on the spooler and warper at the same time. The Barber-Colman cheese is wound with hard sides and a soft center. This makes an ideal package for dyeing and permits the dye liquor to flow radially through the cheese, insuring even penetration. Because of the physical characteristics of the cheese, it is not necessary to backwind dyed cheeses before

BARBER COLMAN

OF BARBER-COLMAN SYSTEM

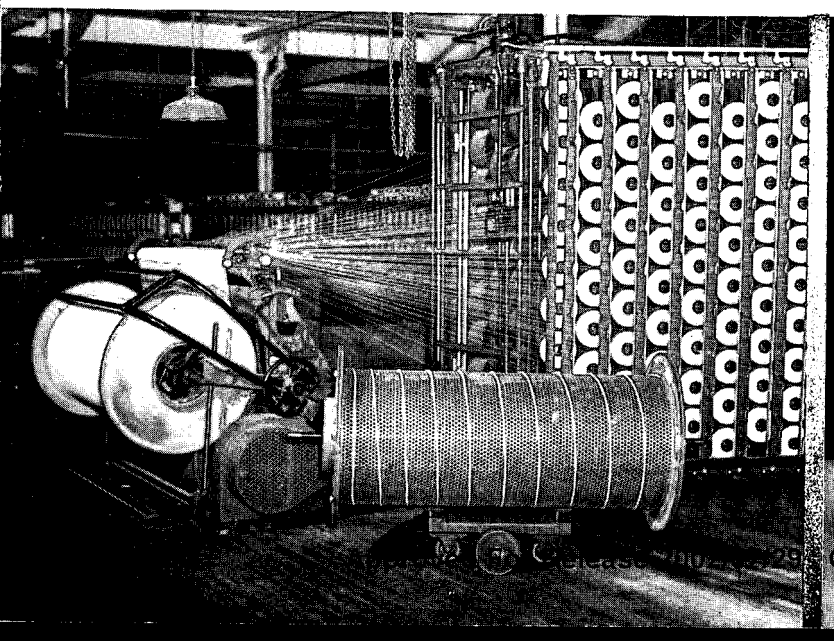
placing them in the creel for warping. The Barber-Colman cheese can be taken direct from the dye carrier and creeled in for striped or solid color beams. No special parts are required on the Automatic Spooler for making the cheeses used for dyeing and only simple adjustments are necessary in order to vary the density of the cheese.

DYE BEAM WARPING The Super-Speed Warper is exceptionally well adapted to winding dye beams where low and uniform density of the yarn mass is required. Yarn wound on Barber-Colman beams is dyed in the most difficult shades with complete satisfaction. Uniform density is one single factor, which more than any other, determines the even flow and penetration of dye liquor. This is provided on the Barber-Colman Warper because no mechanical tension is applied. Air is the only element that adds friction and this provides tension equally to all running threads, resulting in superior beams.

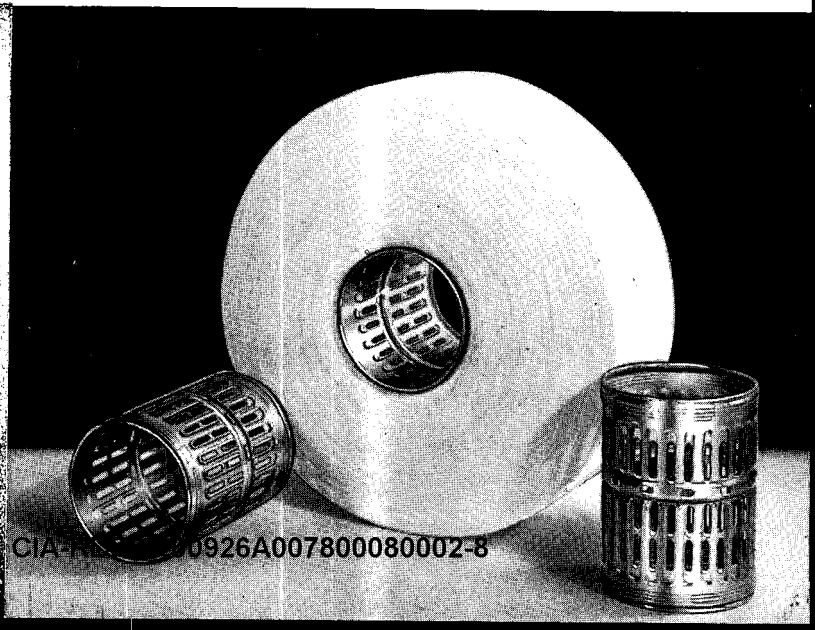
Another advantage of low uniform yarn tension is the ability to wind beams soft enough for satisfactory dye penetration at relatively high speeds. This is possible because no drag is applied to the yarn and delivery is over the end of the cheese. Also, the action of the anti-bounder device, which holds the beam firmly and with uniform pressure against the drum, permits winding a beam of uniform density.

By driving the Warper with a two-speed motor, it is convenient to cut the speed in half by throwing a switch. Section beams can thus be run at 900 yards per minute and dye beams at 450 yards per minute. Best results are obtained with dye beams containing from 275 to 325 pounds of net yarn.

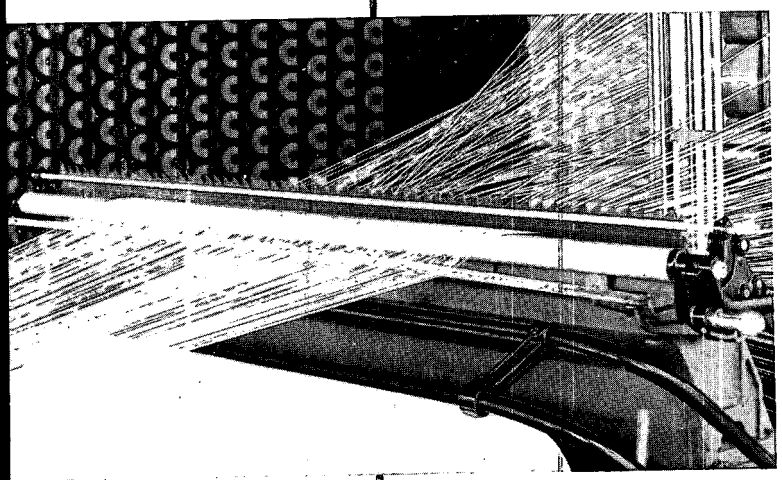
Dye Beam



Stainless Steel Dye Sleeve



Applications



Leasing Comb

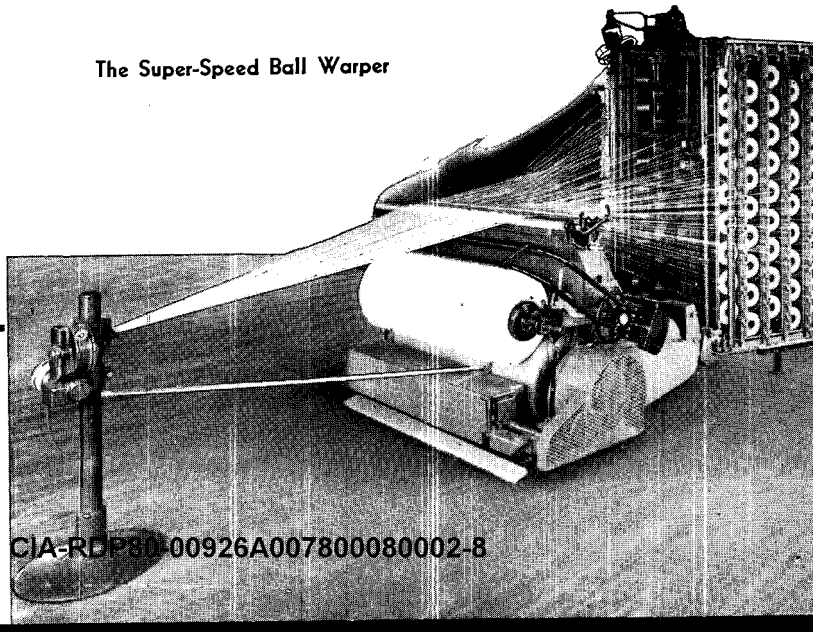
BALL WARPING All the advantages of the Super-Speed Warper, such as low tension, flexibility and high production, apply to ball warping, as the addition of a balling device with only minor changes converts the Beam Warper to a Ball Warper.

The winding speed of the Ball Warper is from 675 to 750 yards per minute. The balls wound are much larger than on ordinary ball warpers and the increased yardage results in greater efficiency in both beaming and slashing.

A special leasing comb has been devised whereby the ends may be quickly and easily laid in, the same as on our Beam Warper. By means of this comb, leases may be struck in about 30 seconds and, because of the improved character of the balls wound, only a fraction of the number of leases required by other ballers is needed. As the ends are broken out after every set of cheeses has been emptied, and the drop wires are easily rendered inoperative, changes of yarn or number of ends may be made on each successive ball without losing time.

It is entirely practical to run balls and beams on the same Warper, as it is not necessary to remove the balling device when beams are wound, and the other changes necessary can be easily made with but a minimum of lost time.

The Super-Speed Ball Warper



BARBER COLMAN

OF BARBER-COLMAN SYSTEM

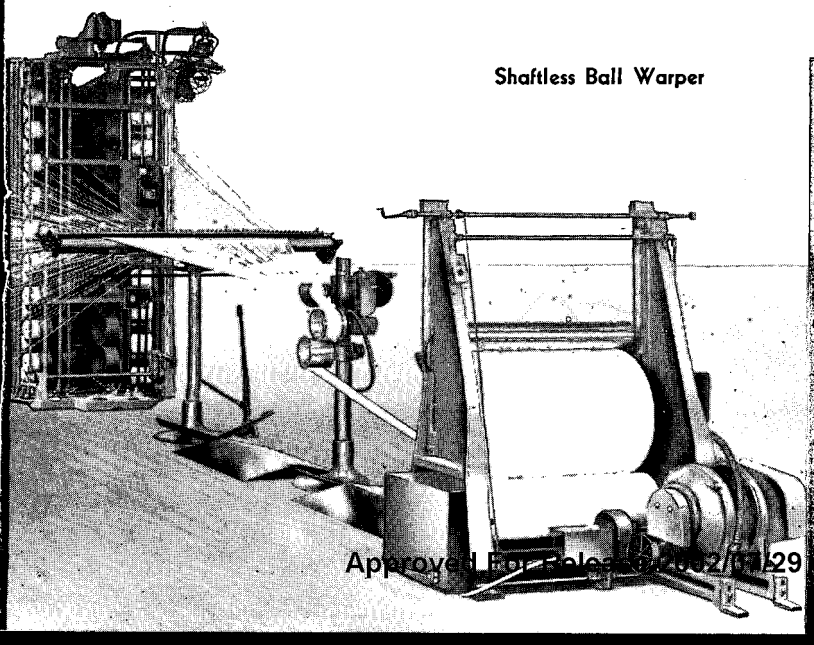
One well-known mill running chambray reports that after replacing warpers winding from cones with Barber-Colman system ball warping, leases required per ball were reduced from 15 to 4. At this same mill the time of beaming after dyeing was reduced 25% and tests showed loom stops decreased approximately 34%.

In a large denim mill, the installation of the Barber-Colman System improved the character of the balls run to the extent that leases were reduced from 7 to 4 per ball and beaming time decreased about 28%.

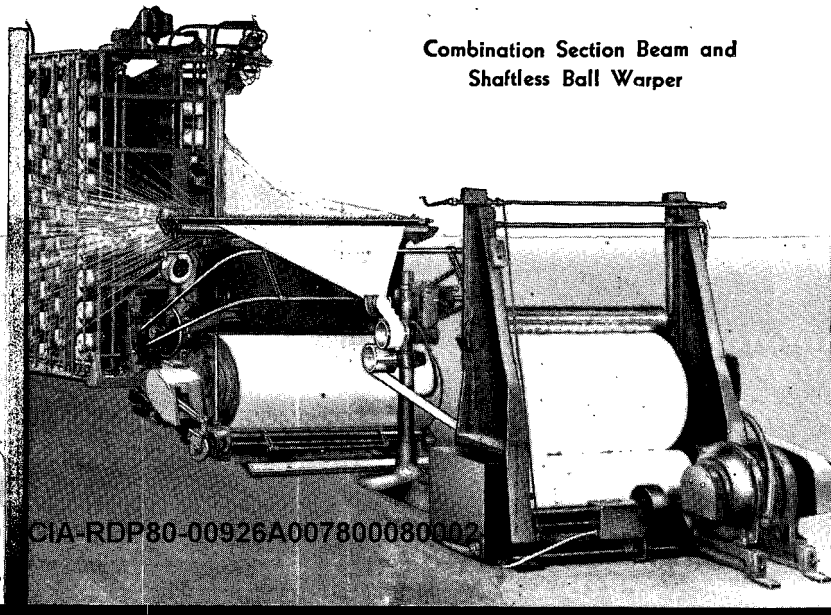
A third mill, running a wide variety of work requiring ball warps, adopted Barber-Colman machines and reduced leases per 10,000-yard ball from 10 to 3, and also experienced material improvement in beaming.

SALE YARN BALLING To meet the needs of mills who ship yarn in ball form, a special Warper has been developed. This machine retains the advantages of other Barber-Colman Warpers, such as low tension, flexibility and high production. It is equipped with the same over-end creel and leasing mechanism as the Super-Speed Ball Warper which has already been described, and the winding speed may be as high as 450 yards per minute depending on specific mill conditions. The maximum sale ball contains approximately 400 pounds of yarn.

Ordinarily when this Warper is installed it is not necessary to make changes in either the type of ball or log in use. For mills that require both sale balls and regular section beams, a combination section beam and shaftless baller can be furnished such as shown.



Shaftless Ball Warper



Combination Section Beam and Shaftless Ball Warper

TWISTING FROM CHEESES

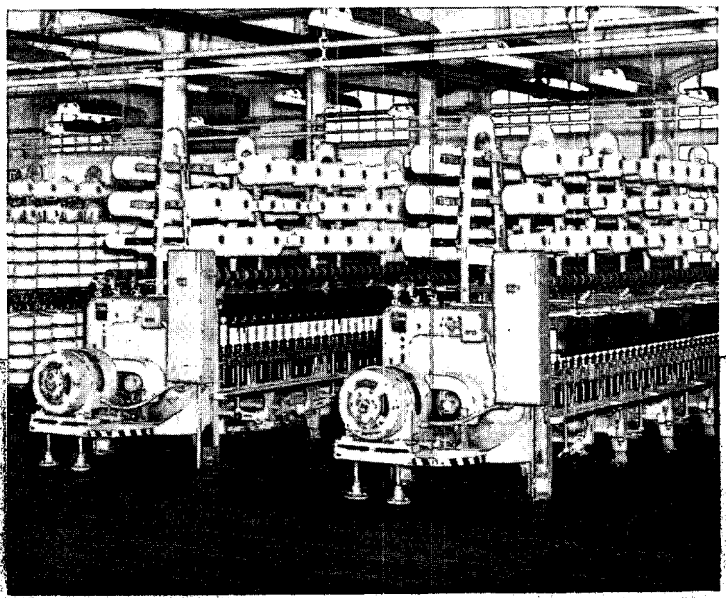
TYPE CC CHEESES Where a great amount of twisting is to be done, the type CC Spooler is recommended. To convert a mill's present creels to accommodate Barber-Colman type CC cheeses, it is necessary in most cases only to replace the spindles. This keeps the cost of conversion to a minimum. In cases where replacement is not practical, Barber-Colman creels with spindles properly spaced may be supplied to fit the mill's twisters.

Using twister creel skewers designed for type CC cheeses, it is possible to twist coarse and medium fine counts on the offset spindle. Creeling is simple, easy and rapid when using the inexpensive type CC spindle.

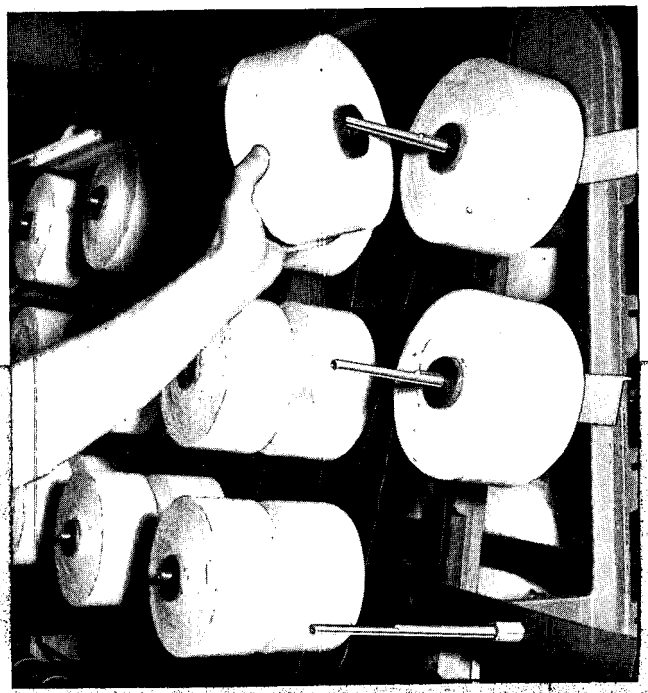
TYPE C BALL BEARING SPINDLE When twisting finer yarns from cheeses, ends down are kept at a minimum by mounting the cheeses on skewers equipped with ball bearings. With this type of bearing, friction is extremely low and it is necessary to add some sort of drag to insure uniform tension and prevent over-running when stopping. This drag is applied to the surface of the cheese through a hinged metal strip or paddle, the weight of which can be varied. Tension thus can be kept low and equal on each running end.

To facilitate creeling, the spindles on the type C ball-bearing twister creel are hinged so they may be turned at right angles to their running position. The skewer is held on the spindle at all times. The sleeve holding the yarn is slipped over the skewer and held in place by a detent which engages the groove inside the sleeve.

Twister Room



Type CC Offset Spindle

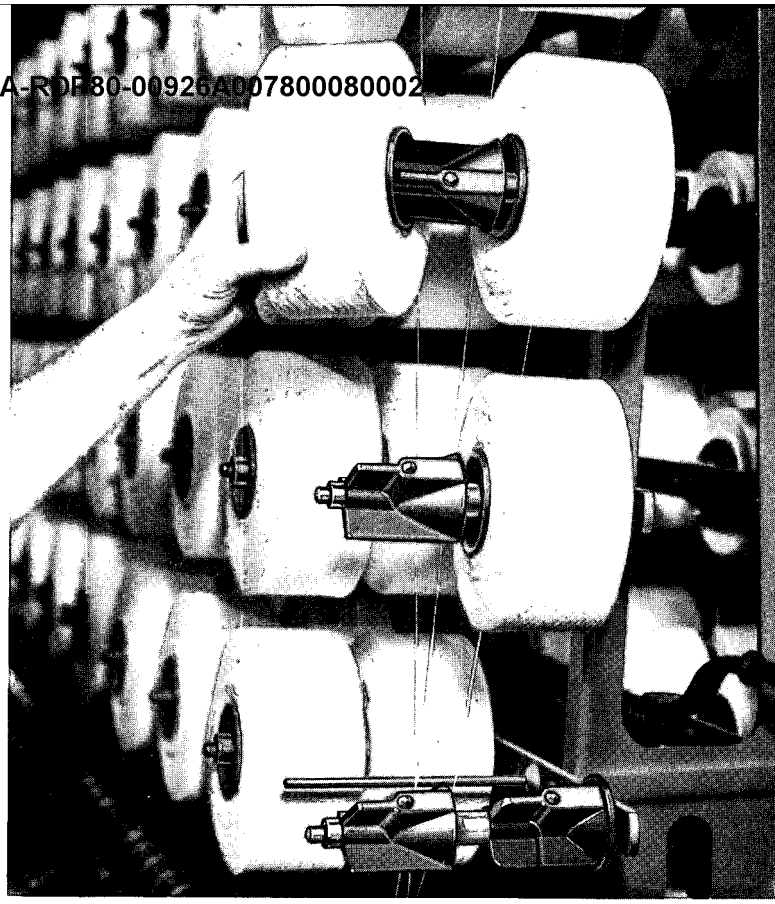


AND BEAMS

TYPE C PLAIN SPINDLE With this type it is necessary to use some sort of "adapter" or "skewer" for holding the cheese on the creel spindle. A bakelite skewer has been developed for this purpose. No drag is required, the friction of the bakelite skewer on the spindle being sufficient to prevent slack in the yarn and over-running when stopping. The low and uniform tension results in satisfactory twist being obtained with a minimum number of ends down during twisting.

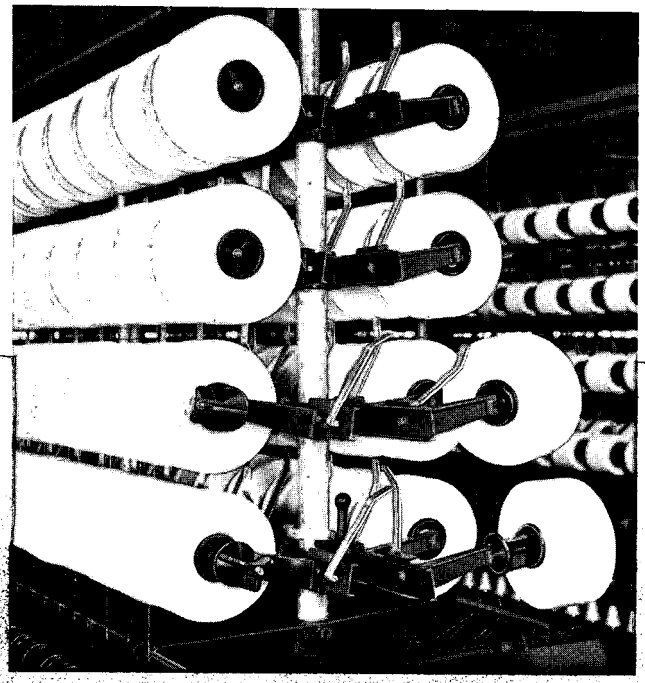
BEAM TWISTING The Barber-Colman Super-Speed Warper winds beams with a minimum of crossed ends, in perfect balance and with smooth round surfaces which permit the most satisfactory twisting. Mills have found Barber-Colman beams satisfactory as a yarn supply for twisting fine yarn numbers.

Tire yarns are usually twisted from beams and a large percentage of the mills on this type of work can testify to the superiority of Barber-Colman beams for this purpose.

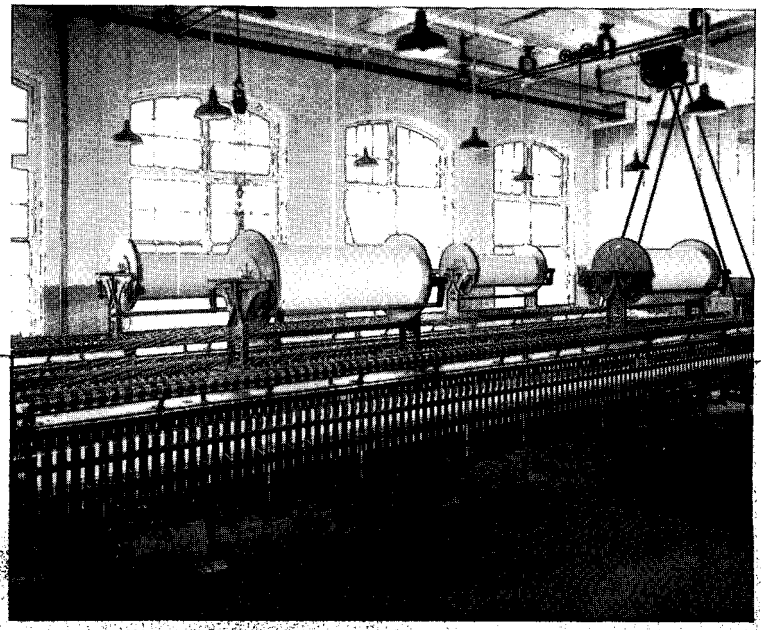


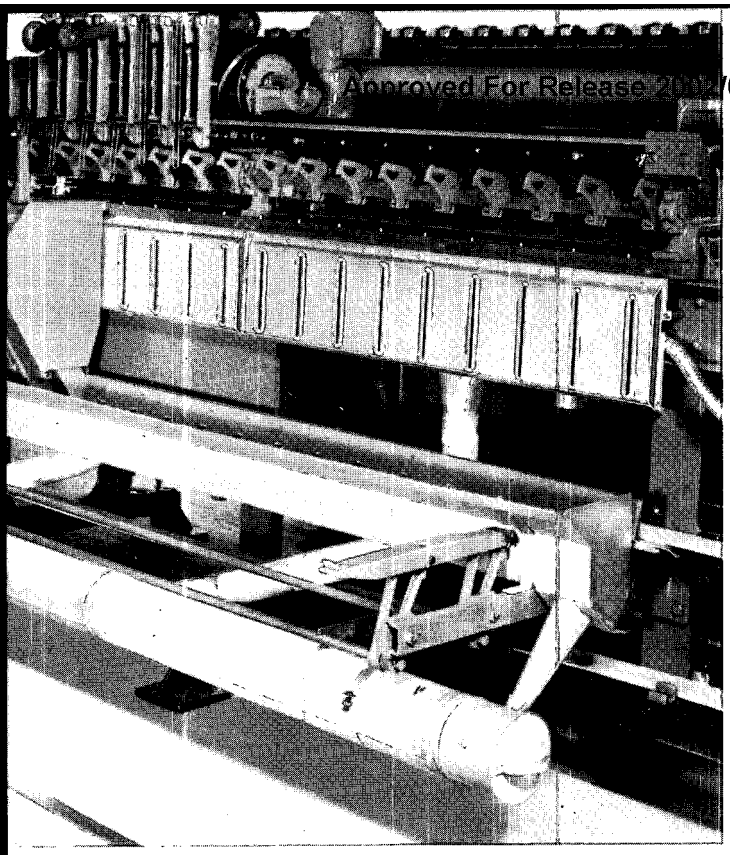
Type C Plain Spindle

Type C Ball Bearing Spindle



Beam Twisting





Other QUALITY

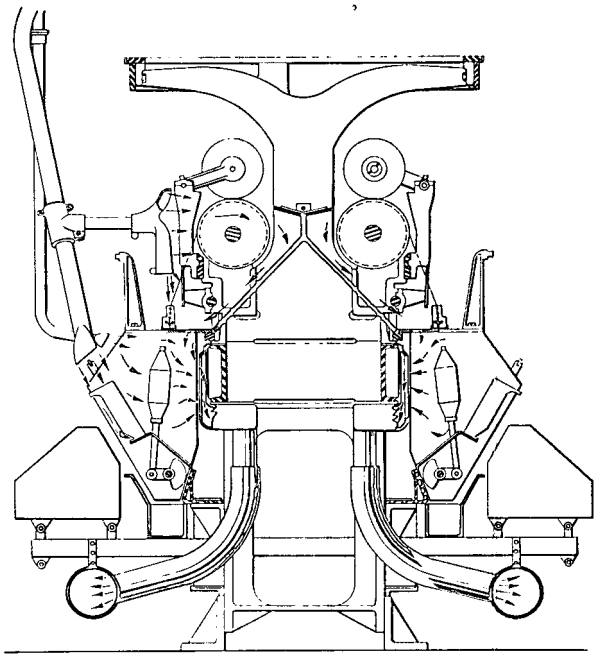
SUCTION CLEANING:

1. Improved Product Quality
2. Increased Production through less stops for cleaning.
3. Improved working conditions provide greater production per worker.
4. Less Sweeping Required.

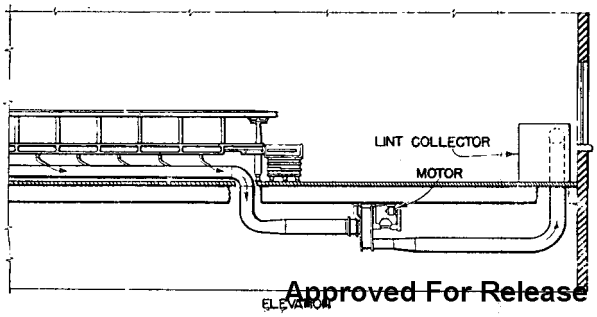
The illustration above shows in detail the parts of the Suction Cleaning System which are attached to the Spooler. Practically all of the lint at the Spooler is formed in the bobbin pockets as the yarn unwinds. Manifolds containing vertical slots are located directly behind and close to the bobbins to collect the lint at its source before it has an opportunity to get out into the room. By collecting the lint at its source, the minimum amount of air is moved to collect the maximum amount of lint and as a result a minimum amount of horsepower is required. The trough under the bobbin pockets collects the heavier material such as leaf. As the traveler moves around the Spooler, the air from the traveler fan pushes this heavier material to the openings in the trough where it is sucked into the collector pipe. The center guards are designed to take advantage of the air currents set up by the drums. These currents are directed toward the suction slots in the manifolds.

LAYOUT — Drawings show a typical layout for the Fan and Lint Collector, used with the Suction Cleaning System on the Spooler. By hanging the fan from the ceiling below, a minimum amount of floor space is used, and only three holes have to be cut in the floor — two for the pipes leading from the collector pipes on the Spooler, and one for the delivery pipe to the lint collector. It is also possible to mount the fan on the ceiling above the Spooler and run the collector pipes up to it, thus avoiding cutting any holes in the floor.

AIR FLOW — In the drawing, arrows show the direction of air currents which pick up lint at points of formation and carry it toward the suction slots in the manifold back of the bobbin pockets. The blast nozzles shown at the left are carried on the traveler and act as additional scavengers of any loose material which may have caught on the machine. The center guards which direct the currents set up by the drums, the trough below the bobbin pockets for heavier material such as leaf, the suction manifold and the two collector pipes, are all clearly shown by heavy lines.

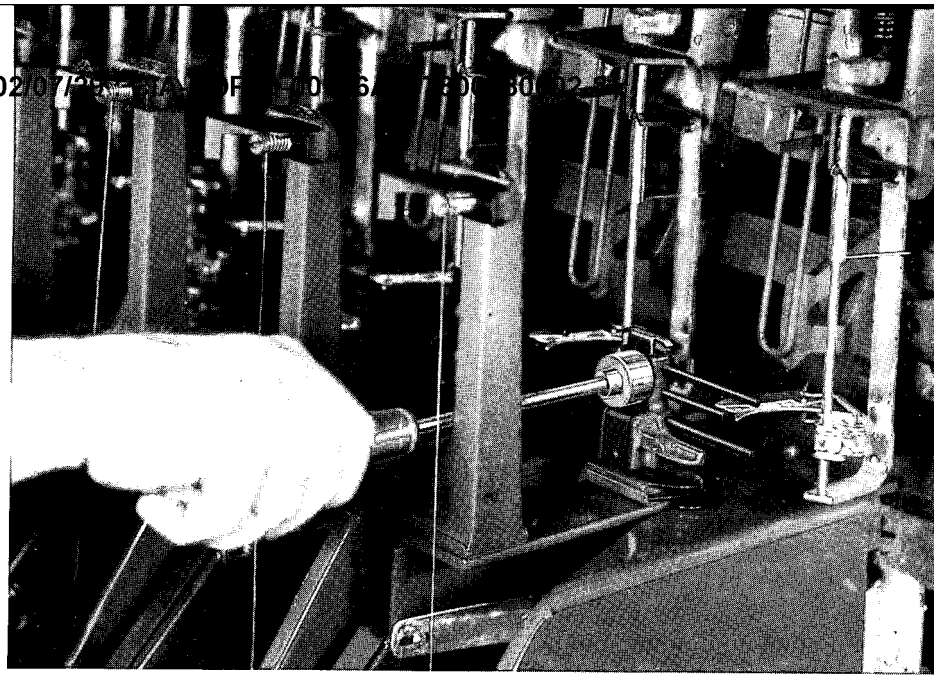


PLAN



ELEVATION

FEATURES

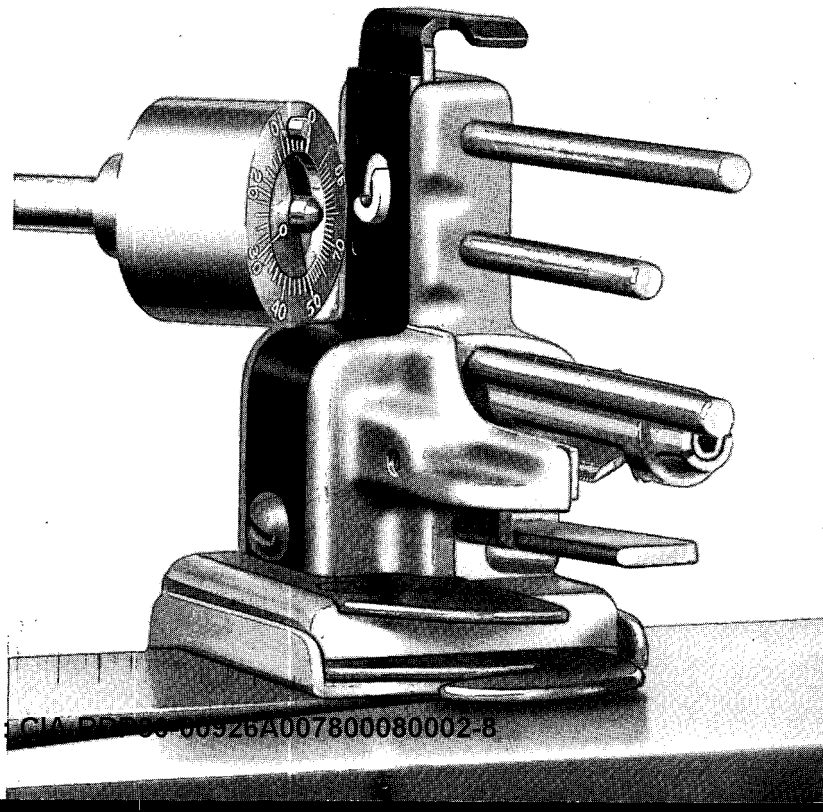


SNICK PLATES There is a constant demand for a yarn cleaner of high efficiency. The "breaker type" snick plate does a thorough, efficient job of cleaning and can be set to do the amount of cleaning required by the mill. Wherever a quality job is required, the Barber-Colman snick plate is highly regarded.

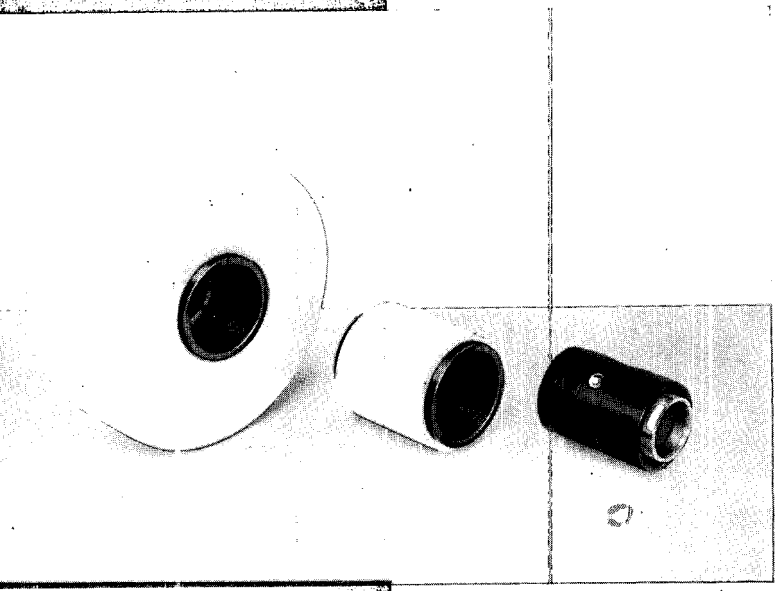
Breaker type quick adjustable snick plates can be set for selective cleaning of coarse counts of yarn used for ordinary purposes, such as denims. Large soft gouts can be removed and smaller more compact defects permitted to pass through, thereby giving maximum production with satisfactory cleaning.

QUICK AND ACCURATE ADJUSTMENT Adjustment of Barber-Colman snick plates is made easily and quickly to suit various yarn counts. This is important to mills running several counts. By using a special adjustable wrench which can be set at any predetermined setting, the snick plates on an entire Spooler can be accurately adjusted to new settings without loss of production. This reduces the time required for changing from one yarn count to another when a change in snick plate setting is required. This also assures an accurate setting which will prevent chafing when coarser counts are run and failure to clean yarn when finer counts are run.

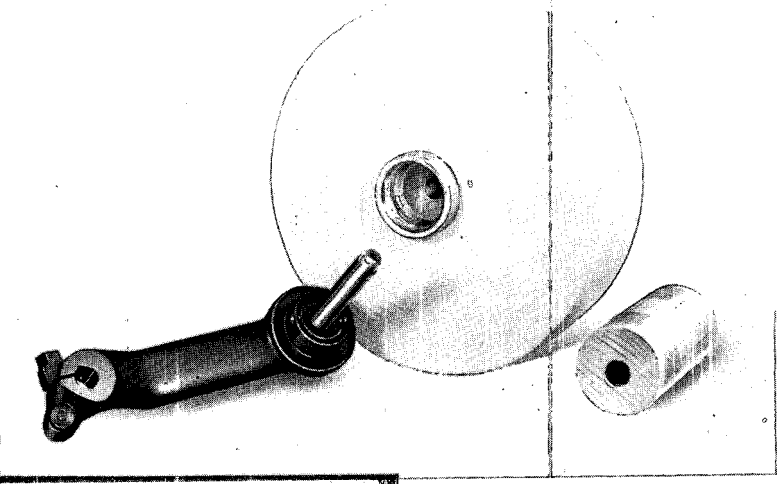
Barber-Colman snick plates are designed for long life. Frames and bearings assure that settings are held accurately.



OPERATION OF THE



Type C Cheese, Starter and Core



Type CC Cheese, Core and Live Spindle

The Barber-Colman Automatic Spooler is made in two different types, the C and CC. The type C Spooler was the first of the two developed and it winds a package of about 2-1/2 pounds on a bakelite sleeve. Later the type CC Spooler was developed, primarily for use in mills where supply packages for twister creels were needed, and this type Spooler uses a wooden core. A full cheese from a type CC Spooler is slightly heavier than a type C cheese.

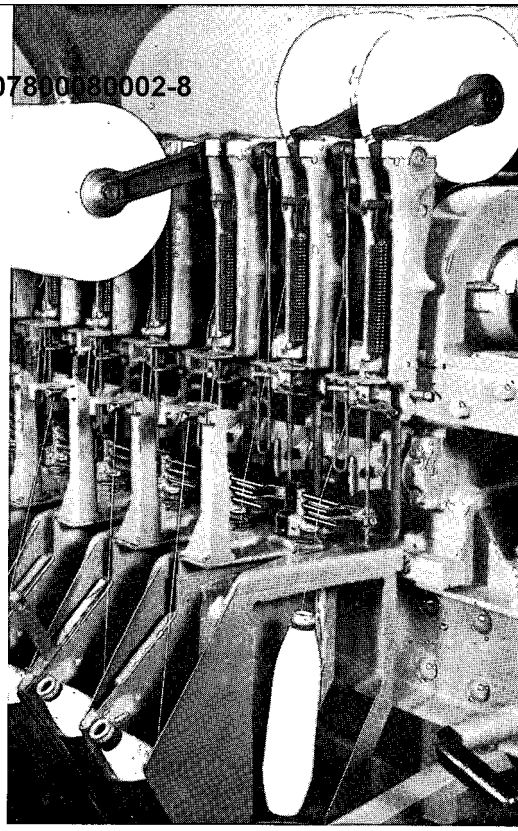
The Automatic Spooler winds a yarn package known as a cheese. The yarn is wound crisscross, making it possible to build up a self-sustaining yarn mass. On the type C Spooler a headless bakelite sleeve is used to make the cheese. This sleeve slips over a ball bearing core, retained as an integral part of the Spooler. A groove inside the sleeve and a ball detent on the core hold the two in rigid alignment.

The type CC Spooler uses a wooden core on which to build the cheese. This wooden core slips over live spindles, retained as integral parts of the Spooler. Rigid alignment between core and spindle is held through a similar ball detent and groove arrangement.

The following description of the Automatic Spooler applies to either the type C or CC. The Automatic Spooler consists of a long frame with a series of spindles or winding units mounted on each side of it. Each winding unit has a swinging arm which supports a cheese upon a spindle with its axis horizontal. By means of this arm the cheese is swung into contact with a drum having a zigzag groove which guides the thread onto the surface of the cheese. Below the unit is the bobbin holder on the top of which is the snick plate (yarn cleaner). The bobbin from which the yarn is wound is mounted

BARBER COLMAN

AUTOMATIC SPOOLER



Winding Units

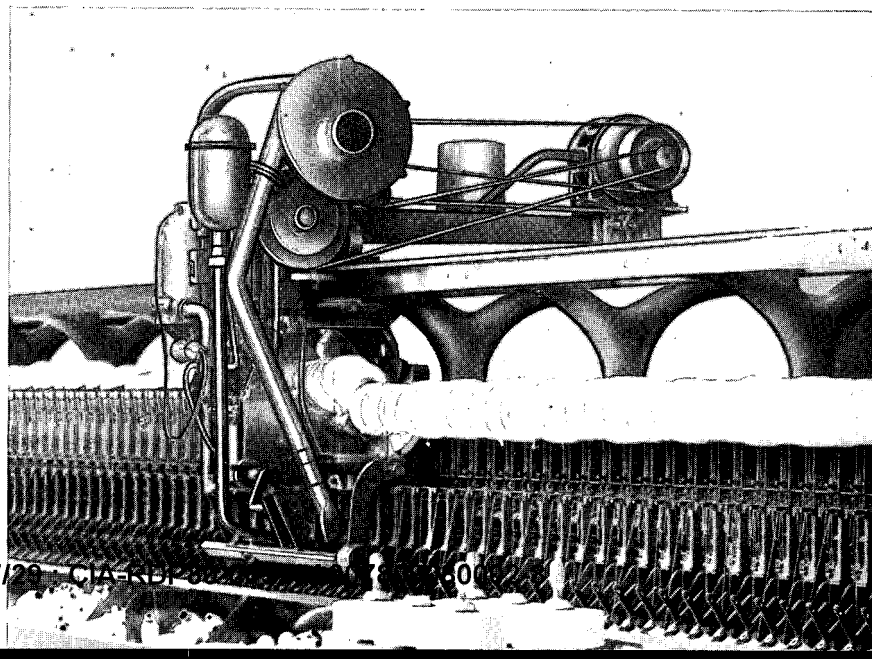
on a skewer in such a manner that the yarn is drawn off the end of the bobbin. The usual winding speed is 1200 yards per minute.

A traveling mechanism known as the traveler is mounted on top of the frame. This traveler is driven by an electric motor and is timed to make a complete circuit of the machine after each set of bobbins has been run off. As the traveler starts down the side of the machine it finds the end on the surface of the cheese by means of suction and carries this end down to the knotter. There the bobbin end, which has already been picked up by the forward movement of the traveler, is waiting. The two ends are tied together and as the knot is cast off the slack is taken up by suction. This action prevents the kinks which are so common in hand spooling or winding and which cause a large proportion of stops in the loom. The cheese is then swung over into contact with the revolving drum and the thread dropped into the zigzag groove. The winding begins immediately upon contact of the cheese with the drum. While the knot is being tied, the empty bobbin is ejected from the bobbin holder. As the cheese goes over to the drum, the bobbin just tied to it is swung from the reserve holder into running position.

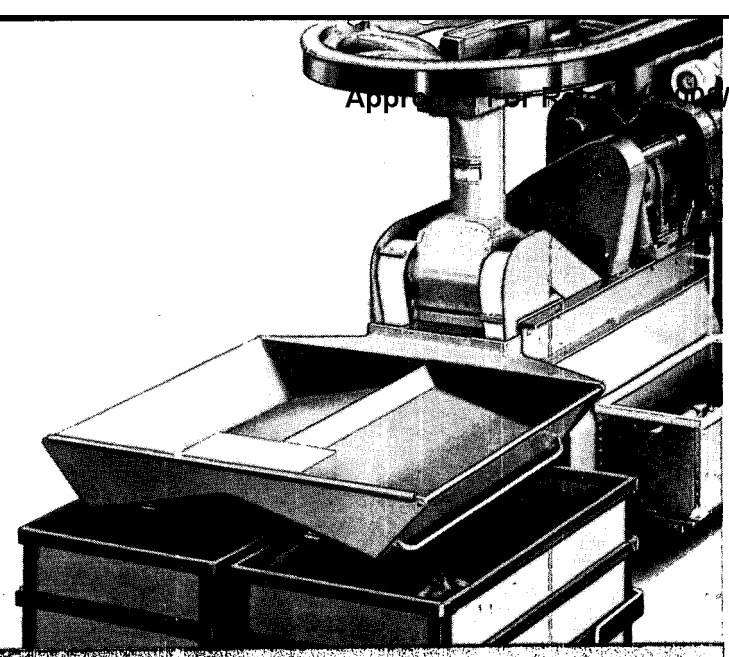
The traveler moves along the machine and the thread detector swings into contact with the running thread. The function of this detector is to cause the removal of the cheese from contact with the drum, whenever the cheese becomes full or when a thread breaks or runs out.

All cheeses are measured as the traveler passes. Full cheeses are not tied up. The bobbins remaining in the reserve holders are a signal to the operator that the cheese should be removed and a starter put in its place. A starter is a sleeve or core having a few layers of yarn.

The Traveler

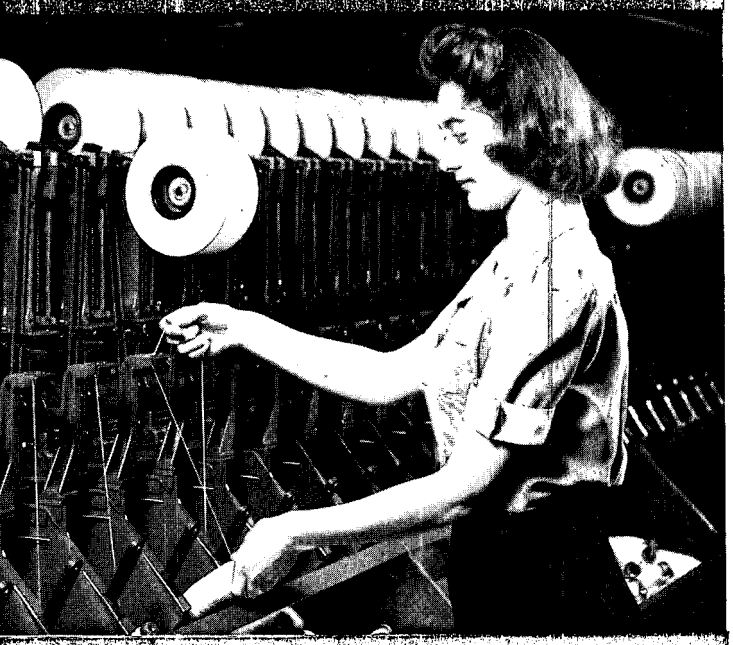


OPERATION OF THE



Sorting Table

Empty bobbins and partially filled bobbins which have broken down during running are ejected from the holder to a conveyor. This deposits them on a sorting table at one end of the machine. The operator, each time around, sorts out those having yarn left and places them back in the bobbin holders to be tied again. The empty bobbins are dropped into trucks beneath the table. Those badly tangled, or with too small an amount of yarn to be economically handled on the Spooler, are sent to a smaller winding machine called a Tailings Machine where they are straightened up or cleaned off.

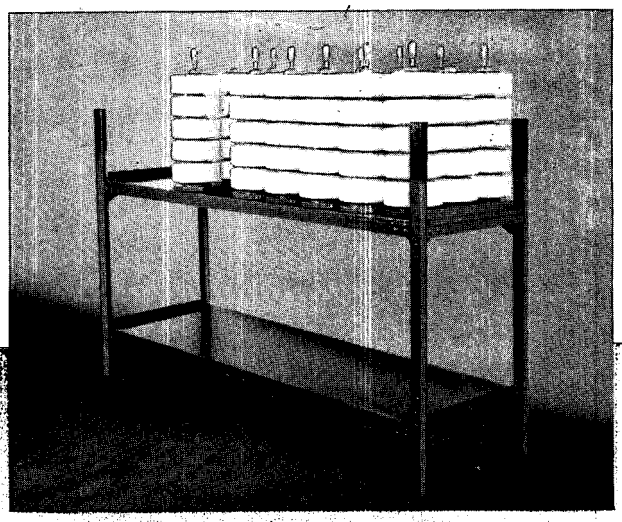


Positioning End and Bobbin

The same series of operations is performed on each cheese all around the machine. As soon as the traveler has passed the first winding unit, an operator follows it filling the reserve holders with fresh bobbins, as shown. She places the end of yarn from each bobbin in a thread clamp in a position to be engaged by the knotter as it passes along the frame. She replaces all full cheeses with starters as shown. The full cheeses are placed on tridents carried on a small truck which runs on a track and is pushed ahead of her along the machine.

Replacing Full Cheese With Starter

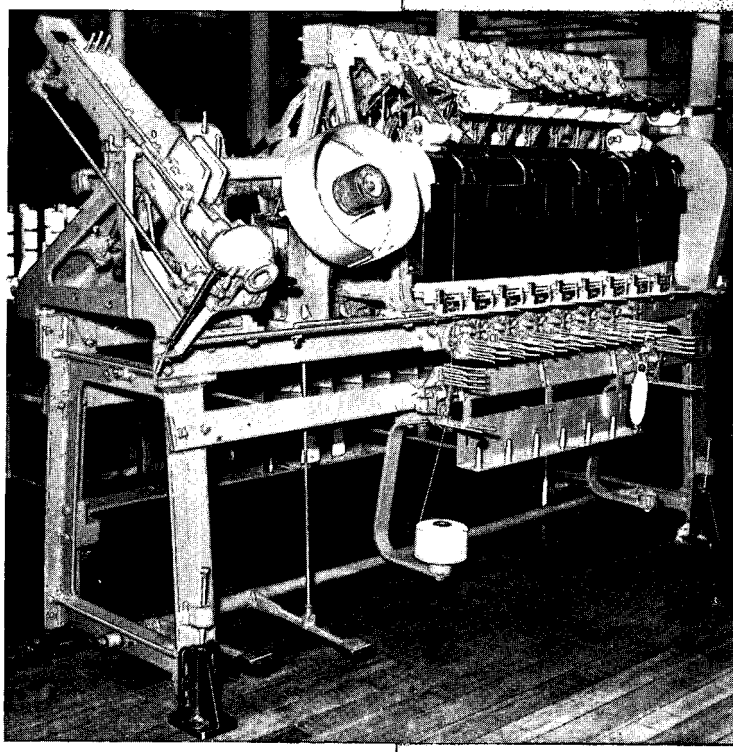
Storage Truck used for storing and transporting yarn



AUTOMATIC SPOOLER

When the operator has a full load of tridents she transfers it to a trident table at the end of the Spooler. The Spooler may be equipped with either one or two trident tables, depending on whether the delivery of empty bobbins is made to one or both ends. The trident table, the top of which is a series of rollers to make the handling of tridents easier, holds full and empty tridents as they are taken to the Warper and returned after being emptied.

Full cheeses wound on the Automatic Spooler may be used as a yarn supply for Super-Speed Warpers, High Speed Warpers, Ball Warpers, Dye Beam Warpers, Knitting Machines and Twister Creels, in fact, for any type of equipment where long lengths of yarn are desirable.



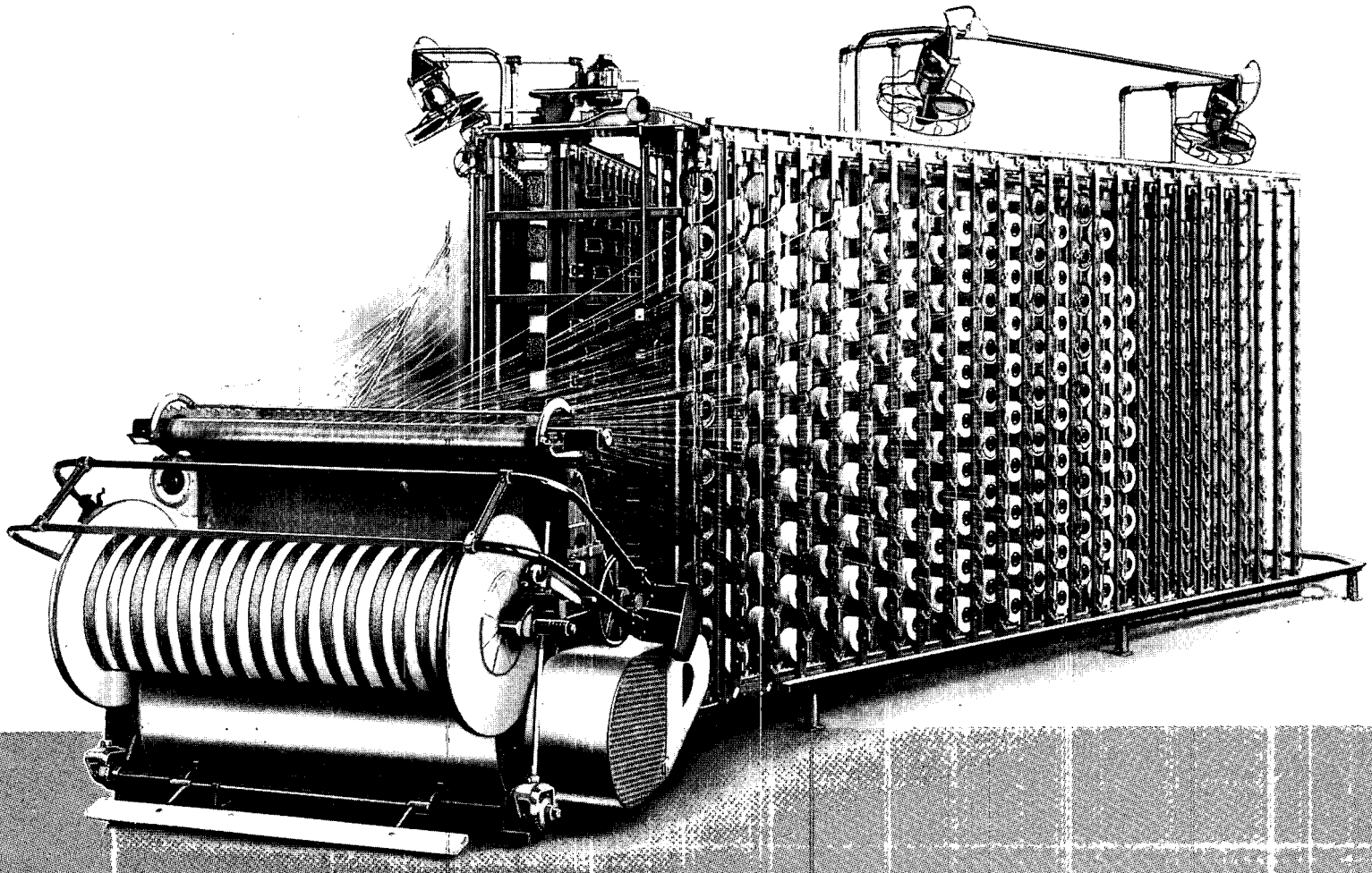
The Tailings Machine is used for making starters for the Automatic Spooler. It is equipped with a mechanism for stripping bobbins, and a waste winder for cleaning up tangled bobbins and cheeses. It is not considered economical to do this work on the high production spooler.

Spooler Installation Showing Trident Truck and Tables

Operation OF THE

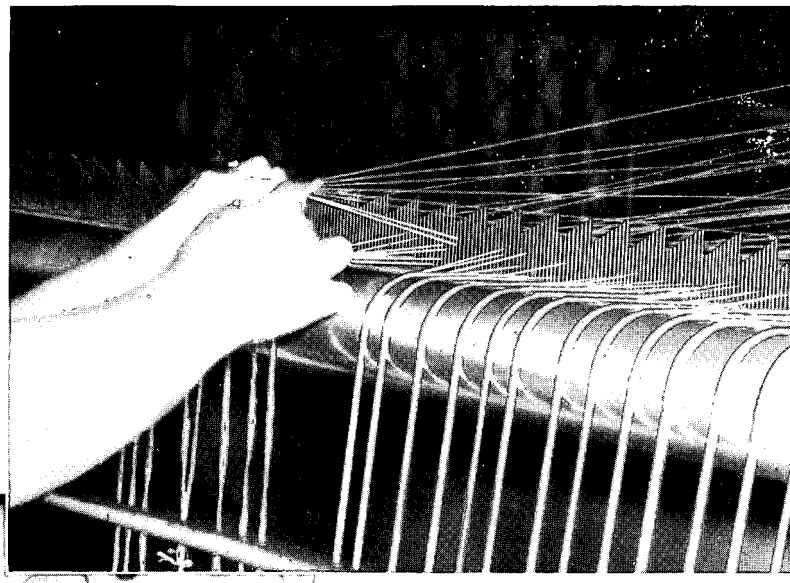
A Super-Speed Warper is shown running striped beams. The creel is made up of a series of vertical bars, each carrying nine cheese holders or spindles. These holders are built with a spring detent which engages the groove inside the bakelite sleeve and fixes the cheese firmly in position. When these Warpers are used on coarse yarns, the holders are placed in cheese containers or receptacles which prevent ballooning together of the running threads. The upper and lower ends of the vertical bars which carry the cheese holders are connected to endless sprocket chains running lengthwise of the creel. These chains extend along the outside of the creel around sprockets at both ends of each creel section and back on the inside, carrying a continuous series of cheese holders on both the outside and inside of each section. This permits the creeling of cheeses on the inside of the creel while the Warper is in operation.

The cheeses are held stationary and the yarn pulled off over the end. When the yarn has been wound off the cheeses on the outside of the creel, a small motor is started and the "starters" or nearly empty sleeves are moved to the inside of the creel.



SUPER SPEED WARPER

This same movement brings the full cheeses from the inside of the creel to running position on the outside. The ends which have been picked up from each vertical row of cheeses at the time of creeling and left hanging as a loose cord, are now in position to be carried forward to the Warper and laid into the single comb. The ends are usually brought forward several rows at a time by a creel girl and passed to the warper tender who, standing in front of the Warper, lays them into a special comb designed for laying-in the ends quickly without error. The whole operation of turning the creel, changing the beam and laying the ends in the comb consumes a total average time of less than fifteen minutes. The fact that the ends are broken out after every set of beams, and that individual drop wires are so arranged that they may be quickly and easily rendered inoperative, makes this type of Warper the most flexible Warping Machine ever offered to the textile industry. Changes of yarn or number of ends may be made on each successive beam without loss of time.

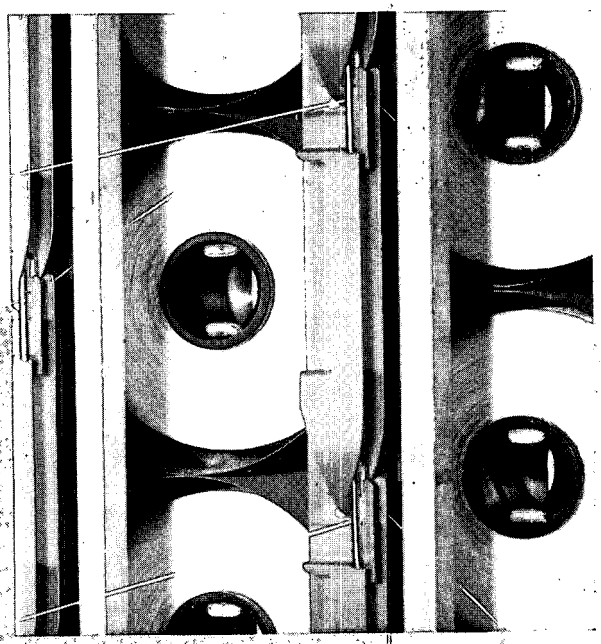


BARBER COLMAN

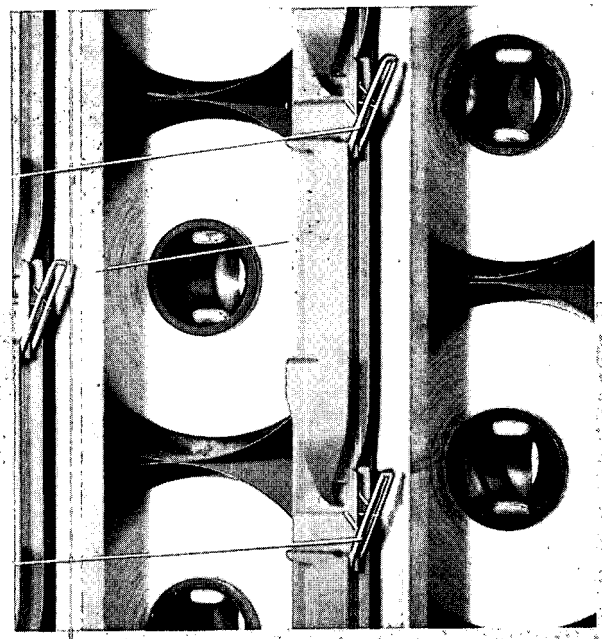
Operation OF THE

The breaking of a thread permits the drop wire to fall from the running position making an electrical connection inside the bar holding the drop wires (where it is impossible for lint to accumulate and prevent action). Completion of the circuit through a solenoid releases a spring cluster which actuates a brake, stopping the rotation of the beam in time to avoid burying the broken end. At the same time all of the drop wires assume the position shown. This places sufficient tension on each strand of yarn to pull out any kinks that may form due to the overrun of the yarn. This tension remains on the yarn during the operation of the Warper at low speed, but is removed as the Warper reaches high speed.

Drop Wires In Running Position



Drop Wires In Start-Stop Position



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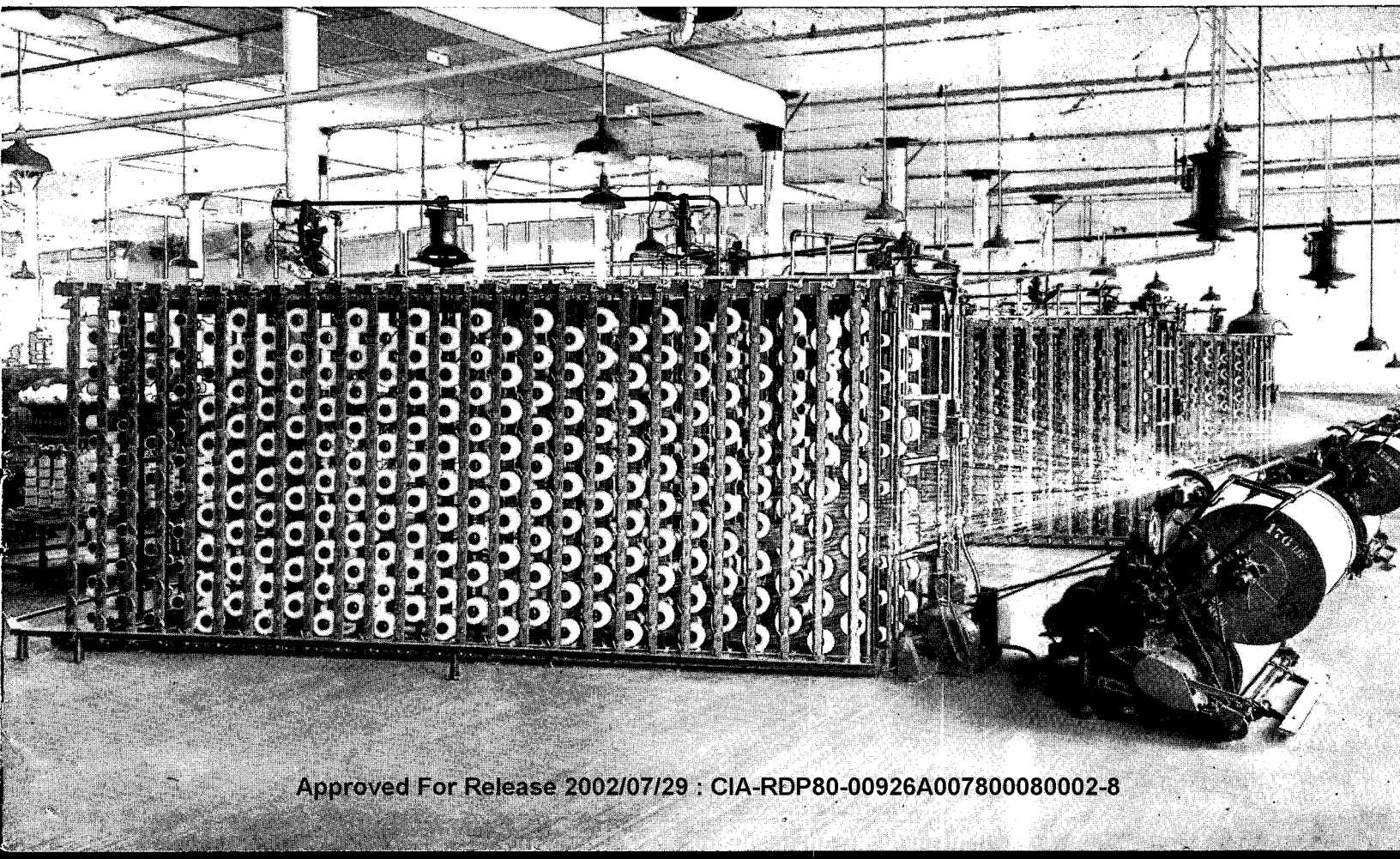
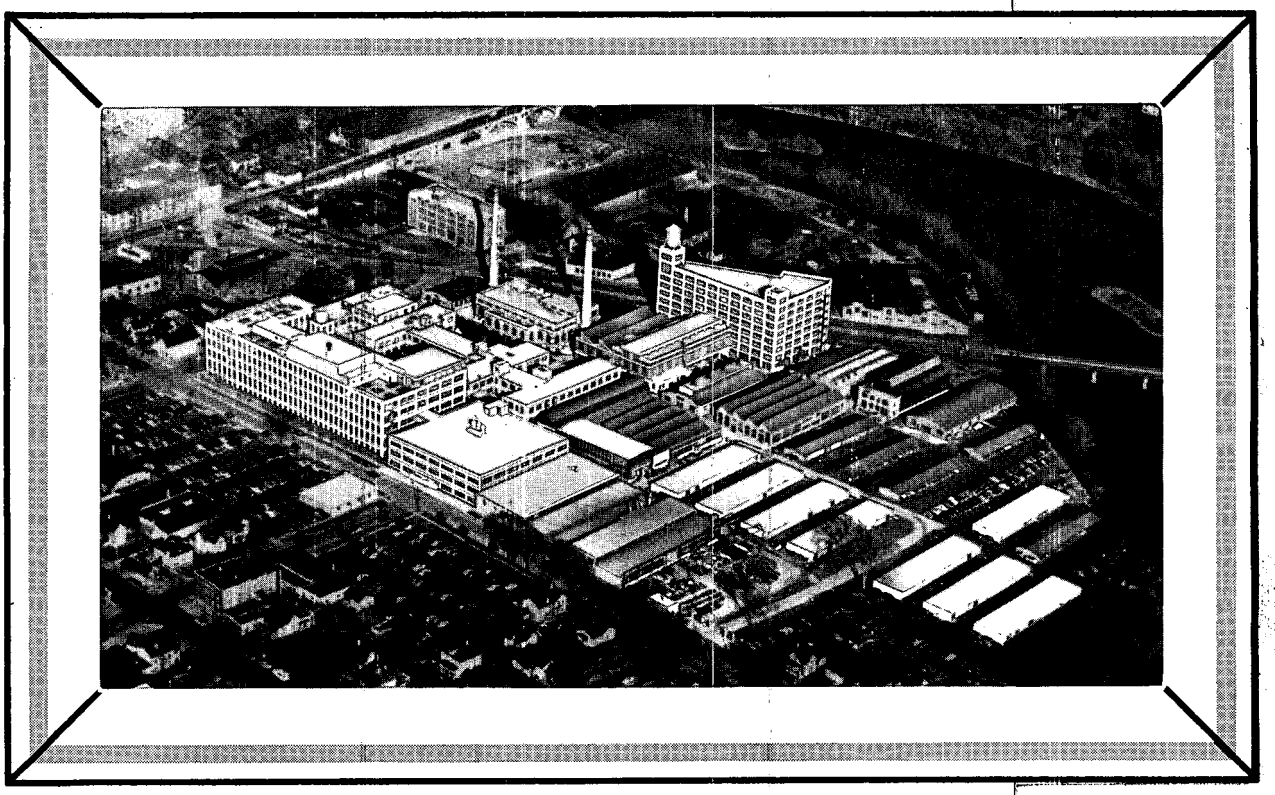
SUPER SPEED WARPER

The careful avoidance of both kinks and high tension during the spooling must be continued through the warping if worthwhile improvement is to be shown in subsequent processes. The winding speed of this Warper is 900 yards per minute. In spite of the high speed the tension is low and uniform due to the fact that no drag is applied to the running threads. Air friction alone supplies the necessary tautness to assure the winding of a smooth beam. The effect of this low and uniform tension, a fraction of that found on other warpers, is the production of a beam in which all the ends are stressed alike. This assures weaving with less breakage than is normal for beams wound with high and unequal tension.





BARBER-COLMAN COMPANY

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